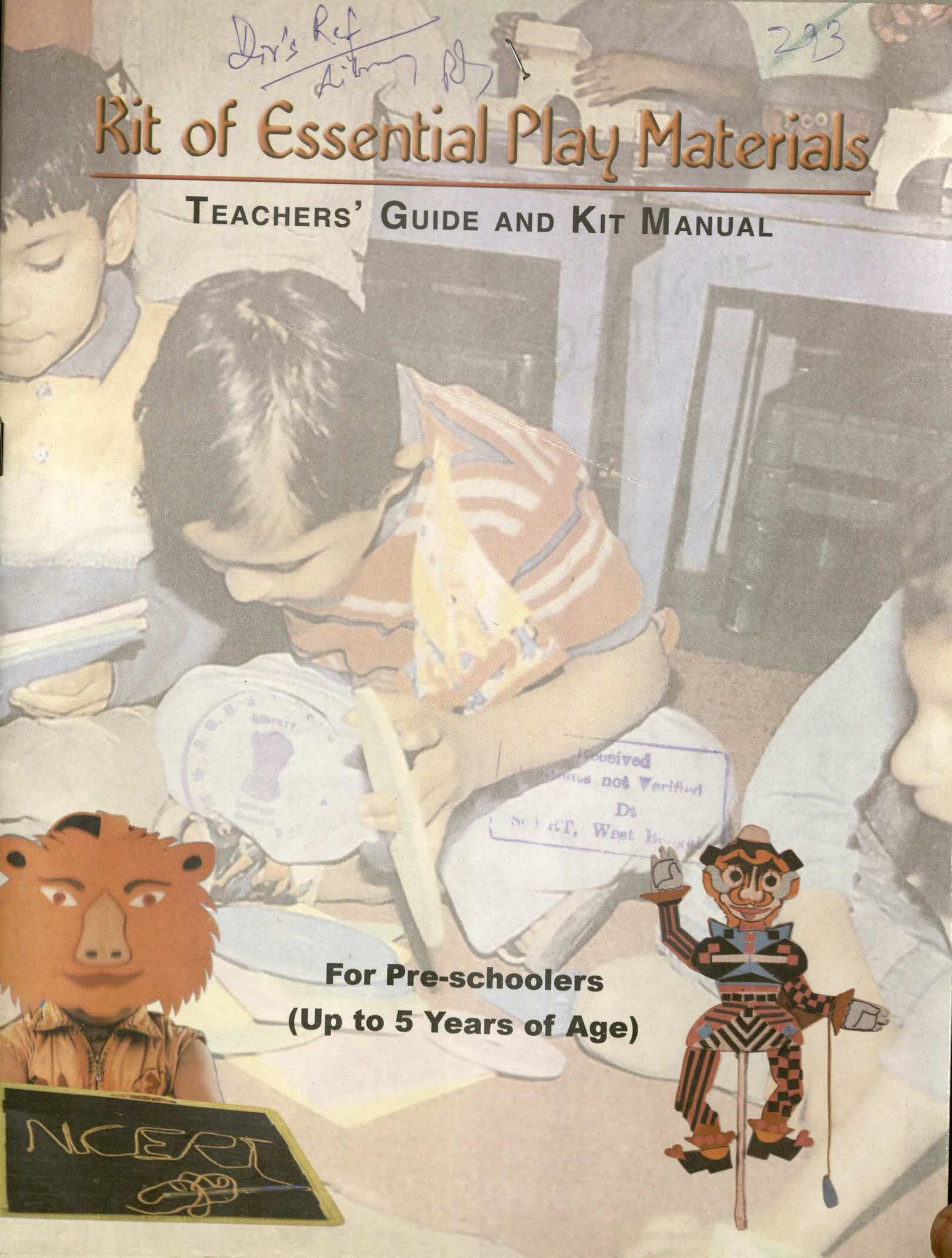
Dir's Ref
Library

293



Kit of Essential Play Materials

TEACHERS' GUIDE AND KIT MANUAL

Received
[illegible] not Verified
Dt
S[illegible]T, West B[illegible]

For Pre-schoolers
(Up to 5 Years of Age)

~~29~~3

299/Gift

KIT OF ESSENTIAL PLAY MATERIALS
FOR PRE-SCHOOLERS
(UP TO 5 YEARS OF AGE)

Teachers' Guide
and Kit Manual

P.K. Bhattacharyya
Professor – NCERT

Received
Contents not Verified
852 Dt 14/8/07
SCERT, West Bengal

Library

राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्
NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING

First Edition
April 2007 Chaitra 1929

PD 5T BS

© National Council of Educational Research and Training, 2007

Library
B. C.

Rs 85.00

Acc NO — 16283

Received
Contents not Verified
SCERT, West Bengal

Printed on 80 GSM paper

Published at the Publication Department by the Secretary, National Council of Educational Research and Training, Sri Aurobindo Marg, New Delhi 110 016 and printed at Gita Offset Printers, C-90, Okhla Industrial Area, Phase-I, New Delhi 110 020

ISBN 81-7450-699-3

ALL RIGHTS RESERVED

- ☐ No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior permission of the publisher.
- ☐ This book is sold subject to the condition that it shall not, by way of trade, be lent, re-sold, hired out or otherwise disposed of without the publisher's consent, in any form of binding or cover other than that in which it is published.
- ☐ The correct price of this publication is the price printed on this page, Any revised price indicated by a rubber stamp or by a sticker or by any other means is incorrect and should be unacceptable.

OFFICES OF THE PUBLICATION DEPARTMENT, NCERT

NCERT Campus
Sri Aurobindo Marg
New Delhi 110 016 Phone : 011-26562708

108, 100 Feet Road
Hosdakere Halli Extension
Banashankari III Stage
Bangalore 560 085 Phone : 080-26725740

Navjivan Trust Building
P.O.Navjivan
Ahmedabad 380 014 Phone : 079-27541446

CWC Campus
Opp. Dhankal Bus Stop
Panihati
Kolkata 700 114 Phone : 033-25530454

CWC Complex
Maligaon
Guwahati 781 021 Phone : 0361-2674869

Publication Team

Head, Publication Department : *Peyyeti Rajakumar*
Chief Production Officer : *Shiv Kumar*
Chief Editor : *Shveta Uppal*
Chief Business Manager : *Gautam Ganguly*
Assistant Editor : *Bijnan Sutar*
Assistant Production Officer : *Rajesh Chauhan*

Visualisation
Prof. P.K. Bhattacharyya

Layout and Illustrations
Ashwani Tyagi

Preface

The development of various skills within each domain is a continuous process; details about the stages of growth can be found in standard books on child development and teachers' manuals. Children's learning does not occur in narrowly defined subject areas; development and learning are interdependent. Based on this, there remains a massive task of capacity building in caregivers, teachers, etc.

This book *Kit of Essential Play Materials* accompanied with a kit, has been carefully developed keeping in mind the need to cater to the children of ECCE centres (Anganwadi) and similar centres in the country.

This book will generally accompany the kit having 21 broad items, which could be divided into 314 pieces.

The items have been designed with a view to fostering

- cognitive development
- socio-emotional development
- gross and fine motor skills
- language development and
- musical intelligence in the pre-school child.

In the case, where the book is not accompanied with a kit, clear methodology has been given so that a similar kit with low cost materials available locally, can be built. Material, dimensions of each item (in millimetre), specification, how to use, how to care for groups with special needs, hints for fabrication with locally available materials...have been elaborated upon. A group of 40 pre-schoolers could be easily engaged at a given time in individual and group activities using these play materials and toys.

At the sensory motor and pre-operational stages of cognitive development of the child, the teacher or caregiver is as important as the mother. Hints and clues from this book can be profusely used to decide when and how to go about —

Independent play, cooperative play, play involving motor skills, visual play, linguistic play, musical play, mathematical play, free/structured play, symbolic play, with the help of the play materials described here. EVA (Ethylene Vinyl Acetate) has been used as raw material for many items in the kit to replace particularly wood considering cost and other factors.

I sincerely hope that this book and the kit would be of great benefit to the users. I thank all those who have put in their valuable time and effort in making this package. Special thanks are due to the contributions of Sh. Parmod Sharma, a dedicated graphic assistant and puppet artist in the CIET, for giving shape to ideas; Sh. Narendra Sharma, Sh. Balbir Singh, Sh. Amarnath of NIE workshop for the fabrication of the kit; Sh. Anil Nayal for draughtsmanship; Sh. Purnendu Kumar Barik for copy editing; and participants in the two workshops for giving suggestions on the package.

Who will use this Package...

The play materials and toys in the kit have been designed for the children of ECCE centres (Anganwadi) and similar centres in the country.

This book and the kit address the requirements of students/trainees of

- ECCE centres *(Anganwadi)* in all parts of country under centrally sponsored ICDS scheme
- Integrated pre-primary and primary teachers' training also known as Nursery Teachers' Training (NTT)
- M.A./M.Sc. (Child development)
- B.Ed./M.Ed. (Specialisation in ECCE)
- Anganwadi Workers' Training
- Nursery/Pre-primary Teachers' Training
- Diploma in ECCE offered through distance mode
- Bal sevika training of ICCW
- Pre-school Teacher Education Programme
- Nursery Teacher Education Programme
- Higher/Senior secondary stage of education of CBSE, NIOS and other state education boards with Early Childhood Education as an area of vocational education.
- Other such institutes particularly for modules on child development, programme planning and transaction, play and development, activities and materials, practical work.

Caregivers, parents and anybody interested in play materials for pre-school children will find this package useful.

Author

Contents

Preface iii

I. Play Materials for Socio-emotional Development

1 House puzzle 1
2. Blocks 3
3. Shape seriation figures with stands (36 pcs) 6
4. Object puzzle – 3 pc (2 sets), 6 pc (1 set) 8

II. Materials for Fine Motor Skill

5. Threading board – 2 pcs (one plain perforated, other in the shape of a tree.) 11
6. Velcro slate-cum-chalkboard (with chalks) 13
7. Beads with string 15
8. Simple geometrical shapes (Triangles, Rectangles, Squares, Circles in 3 sizes, and in 3 colours, e.g., RBY–48 pcs) 17
9. Toy (Bird) with magnets. 20

III. Materials for Language Development

10. Flannel board and cut-outs – 20 pieces (inner side of opened-out kit box) 22
11. Masks (head masks, 5 characters) 24
12. Finger puppets – 3 pcs 26
13. Doll-cum-glove puppet (1 male, 1 female) 28

IV. Materials for Motor Skill Development

14. Ball with sound 30
15. Stacking cups 31
16. Wheel toy 34

V. Music and Rhythm

17. Flute 36
18. Ankle bells *(Ghungroo)* 38

VI. Cognitive Development

19. Pre-number concept cards (near-far, small-big, etc.) 39
20. Observation skill cards ('what is missing?') 41
21. Kit box (to be used as flannel board, conversation calendar) with packing bags (with picture and names of contents printed on each)– 8 Nos 42

VII. Toy Ideas

Toy Ideas – I General 51
Toy Ideas – II Working with clay and papier mache 55
Toy Ideas – III Working with wood, plastic, EVA, metal, etc. 60
Toy Ideas – IV Paper craft 66

Items of the Kit of Essential Play Materials for Pre-schoolers (Up to 5 Years of Age)

I. PLAY MATERIALS FOR SOCIO-EMOTIONAL DEVELOPMENT

1 House puzzle
2. Blocks
3. Shape seriation figures with stands (36 pcs)
4. Object puzzle – 3 pc(2 sets), 6 pc (1 set)

II. MATERIALS FOR FINE MOTOR SKILL

5. Threading board – 2 pcs (one plain perforated, other in the shape of a tree.)
6. Velcro slate-cum-chalkboard (with chalks)
7. Beads with string
8. Simple geometrical shapes (Triangles, Rectangles, Squares, Circles in 3 sizes, and in 3 colours, e.g. RBY–48 pcs)
9. Toy (Bird) with magnets.

III. MATERIALS FOR LANGUAGE DEVELOPMENT

10. Flannel board and cut-outs–20 pieces (inner side of opened-out kit box)
11. Masks (head masks, 5 characters)
12. Finger puppets – 3 pcs
13. Doll-cum-glove puppet (1 male, 1 female)

IV. MATERIALS FOR MOTOR SKILL DEVELOPMENT

14. Ball with sound
15. Stacking cups
16. Wheel toy

V. MUSIC AND RHYTHM

17. Flute
18. Ankle bells *(Ghungroo)*

VI. COGNITIVE DEVELOPMENT

19. Pre-number concept cards (near-far, small-big, etc.)
20. Observation skill cards ('what is missing?')
21. Kit box (to be used as flannel board, conversation calendar) with packing bags (with picture and names of contents printed on each)– 8 Nos

Bag 1 (300x400 mm) – House puzzle;
Bag 2 (300x400 mm) – Blocks;
Bag 3 (300x300 mm) – Shape seriation set with stands;
Bag 4 (30x400 mm) – Object puzzles, Cut-outs, Masks;
Bag 5 (300x400 mm) – Threading boards, Velcro-cum-chalkboard;
Bag 6 (300x300 mm) – Puppets, Dolls; Flute, Simple geometrical shapes
Bag 7 (300x300 mm) – Toy(Bird) with magnet, Ball with sound, Stacking cups, Wheel toy;
Bag 8 (300x300 mm) – Beads with string, Cards.

I. PLAY MATERIALS FOR SOCIO-EMOTIONAL DEVELOPMENT

1. House Puzzle

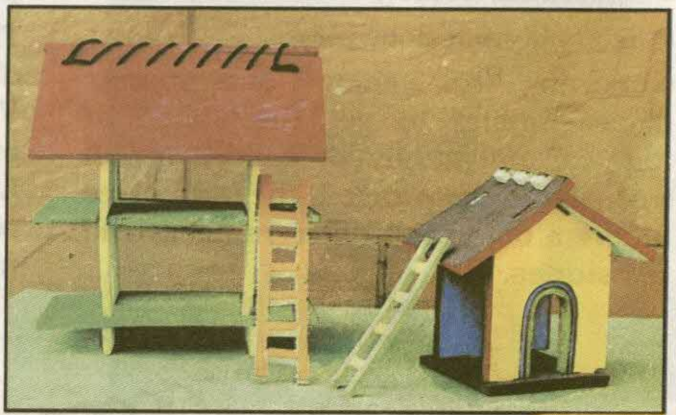


Fig. 1a

Specification

The assembled house measures 300 long × 150 wide × 260 mm high with three floors. Total 7 pcs of EVA sheet

Thickness: 10 mm

colour—

roof; brick red
verticals; yellow
horizontals; green
one lace 1 metre long.

OBJECTIVES

- Socio-emotional development
- Motor skills
- Creative thinking
- Language skill

Constructional details

The exploded view at Fig. 1c shows how the 7 pieces are joined together to get the assembly at Fig. 1b. The two sloping roofs are joined by the lace.

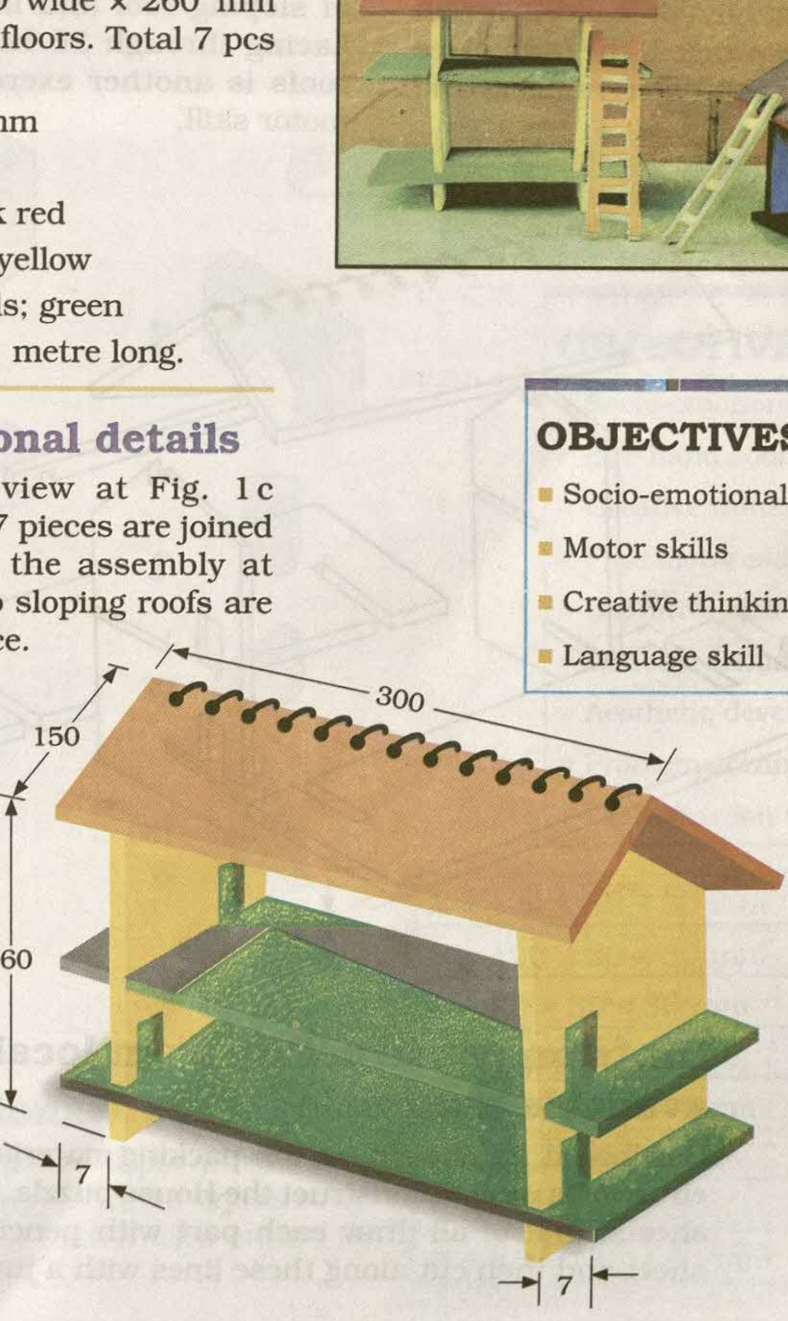


Fig. 1b

How to use

- Individual activity
- Free play ▪ Indoor play

Children will enjoy assembling/ disassembling to get the shape at Fig. 1a individualy or collectively. If free play is encouraged, they will place different objects on different floors and tell stories.

For children with special needs

They may be guided to assemble, disassemble and again assemble. Visually impaired will feel the contour of sloping roof and layout of floors. Lacing through 26 holes on the two roofs is another exercise to develop motor skill.

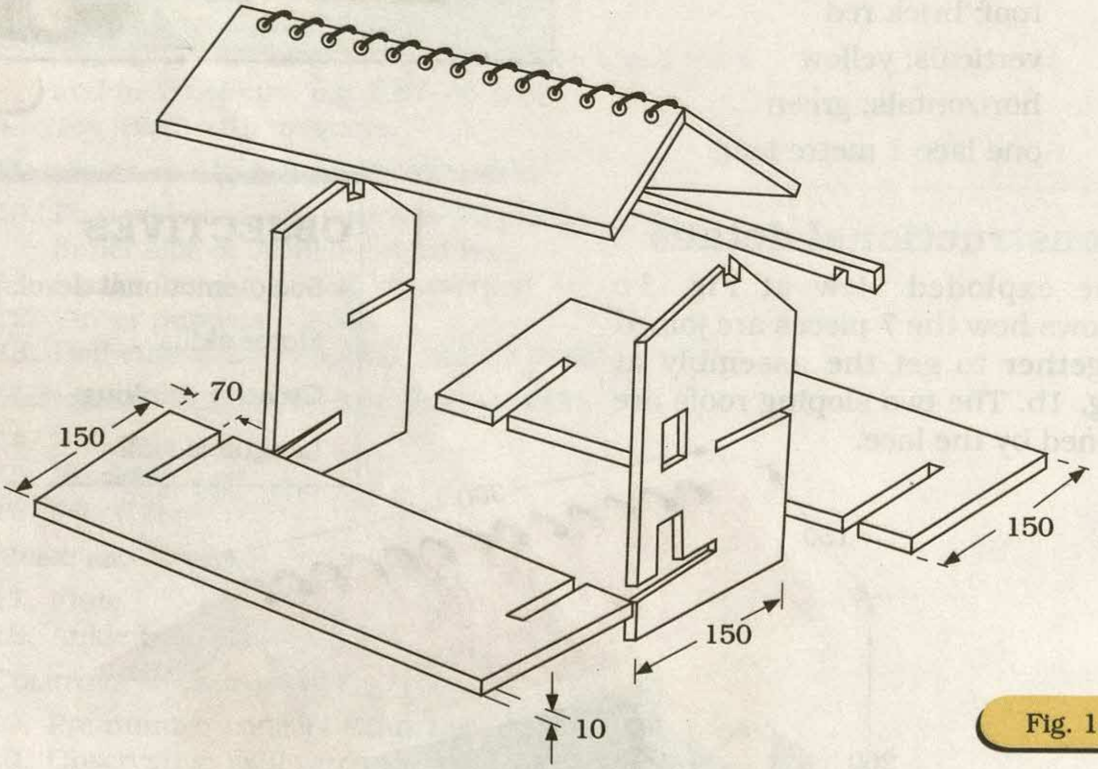


Fig. 1c

Hints on construction from locally available materials

Hardboard, cardboard, carton-packing material, plastic sheets, etc. can be used to construct the House puzzle. For cutting such sheets, first of all draw each part with pencil on the chosen sheet and then cut along these lines with a junior hacksaw.

2. Blocks

Specification

35 pieces of dimensions shown at Fig. 2b,

Material: EVA

Colour: off-white

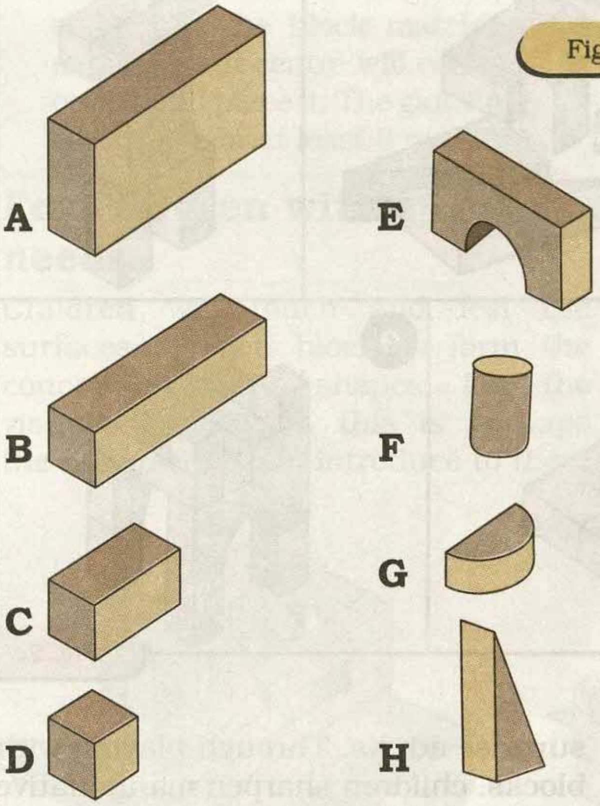


Fig. 2b

Constructional details

Each piece is finished as per dimensions specified. If any piece is incorrectly made, it will not match with others in the assembly.

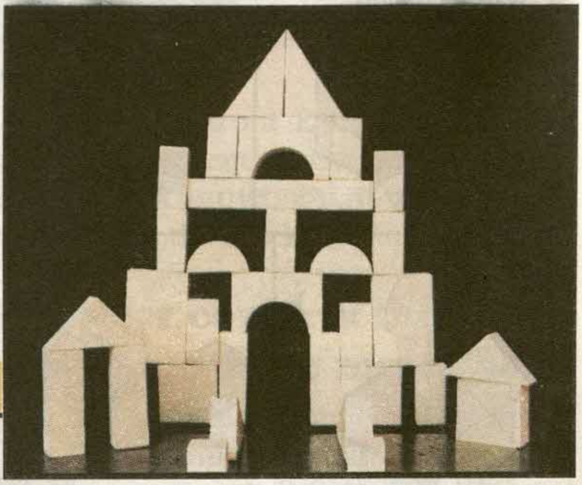


Fig. 2a

OBJECTIVES

- Socio-emotional development
- Eye-hand coordination
- Creative thinking
- Fine motor skill
- Cognitive skill
- Concept formation
- Aesthetic development
- Problem solving skill
- Classification skill

A = 120 × 60 × 30 mm	4 pcs.
B = 120 × 30 × 30 mm	7 pcs.
C = 60 × 30 × 30 mm	8 pcs.
D = 30 × 30 × 30 mm	6 pcs.
E = 120 × 60 × 30 mm	2 pcs.
F = Ø30 × 60 mm	4 pcs.
G = Ø60 × 60 mm	2 pcs.
H = 60 × 120 × 30 mm	2 pcs.

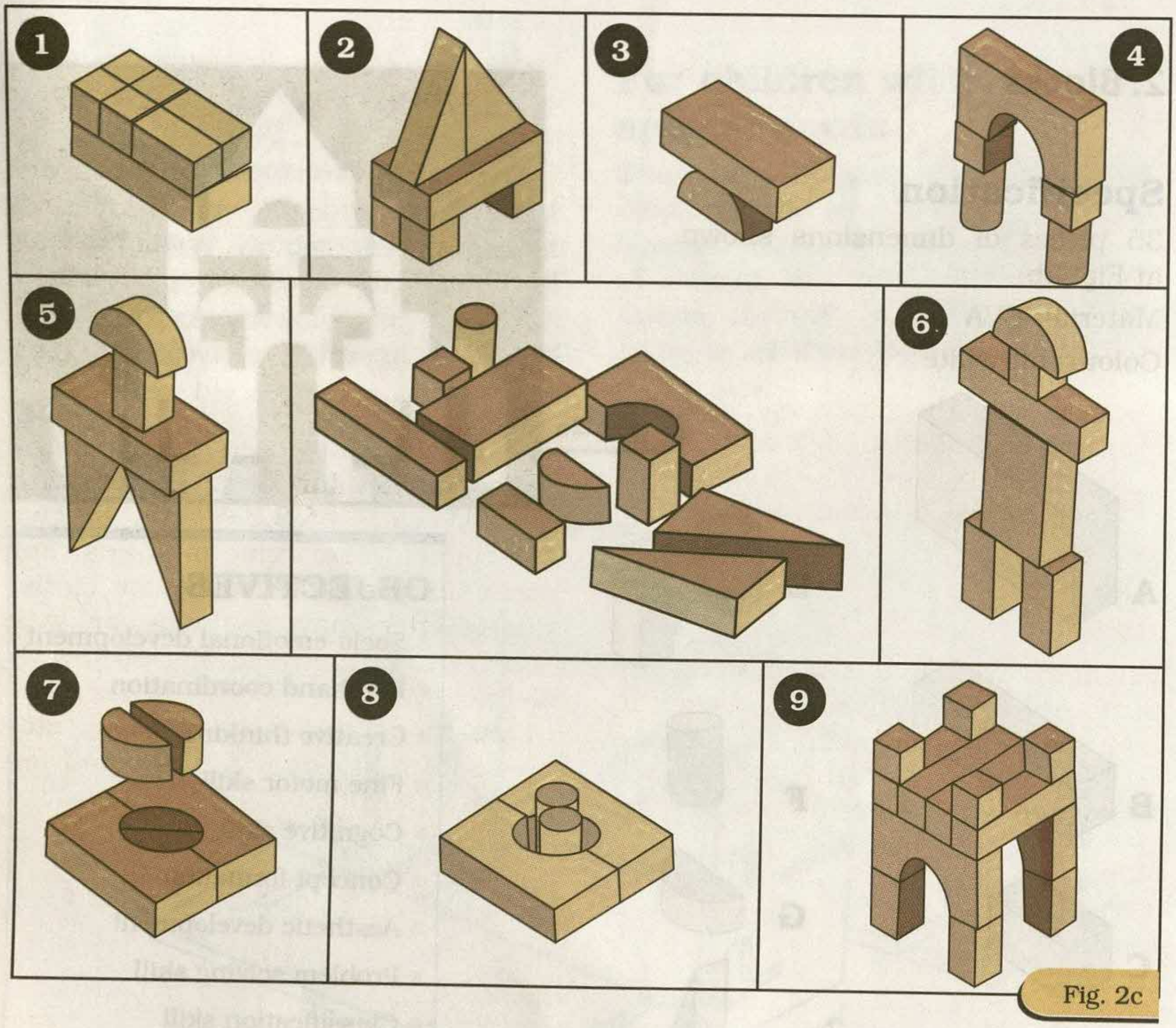


Fig. 2c

How to use

- Individual activity
- Group activity
- Guided play
- Free play

The child may be guided to construct simple to difficult assemblies as at 1 to 9 (Fig. 2c). Subsequently the child will construct more complex assemblies as at Fig. 2d and 2a. After this, if free play is allowed, the child will invent many combinations which might surprise adults. Through playing with blocks, children sharpen manipulative skill, logical and creative thinking.

Hints for guided play

Children may be asked to

- make sets of blocks of similar
  (a) size (b) shape
- identify blocks as per drawings at Fig. 2b.

- Assemble blocks as per 9 drawings (Fig. 2c) and then 4 drawings (Fig. 2d)
- Seriate blocks in order of length.
- Describe each block after observing the same.
- Stand in a big circle (one block with each) and keep circling till the flute (being played by the teacher) stops making sound. As they stop, the child with the block matching the same kept at centre will come to the centre and place it. The game may be continued for at least 8 rounds.

For children with special needs

Children will touch and feel the surfaces of each block to form the concept of basic shapes. For the visually challenged, this is perhaps the only medium to introduce to them basic shapes, surfaces, how two solids at 'D' equal to one as at 'C' (concept of volume), etc.

The blocks from EVA sheet do not have sharp corners. Even if any block is thrown at somebody, it will not hurt her/him as the blocks are soft and light.

Hints for construction from locally available materials

The teacher may join empty metal boxes or similar such boxes with glue in units of 2,3,4, etc. to give the concept of volume of solids. For other shapes like triangle or circle, the teacher may use clay or wax which can be moulded. Various types of spongy synthetic materials used in cushions, pillows, packing, etc. and papier mache could be used for making blocks locally.

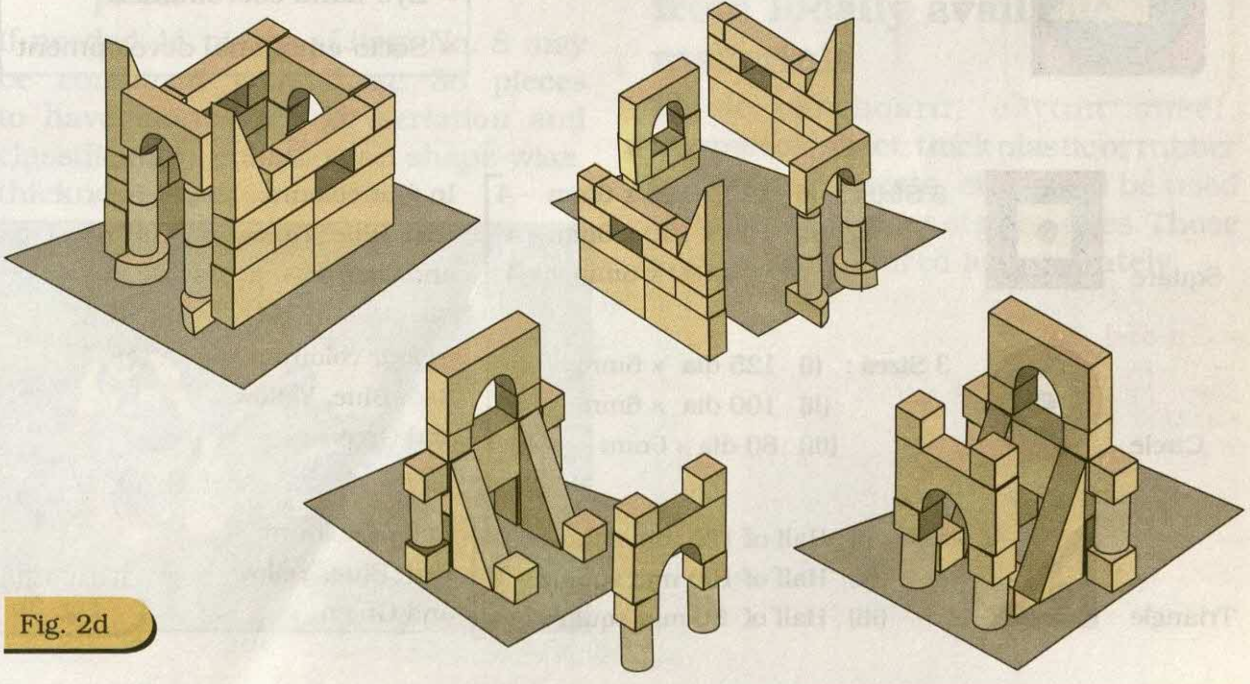


Fig. 2d

3. Shape Seriation Figures with Stands (36 pcs)

Specification

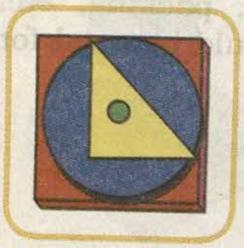
A. Base from EVA sheet 30 mm thick, 3 Nos. as in Fig. 3c.

B. Squares, circles, triangles (36 pcs) are punched out from EVA sheets as given in Fig. 3b.

Constructional details

Three bases from EVA sheet (30 mm) and rods (plastics) are constructed as shown in Fig. 3c. The rod is fitted to the base.

Thirty six (36) pcs (EVA) in square, circular and triangular shapes are prepared as per sizes and colours given at Fig. 3b.



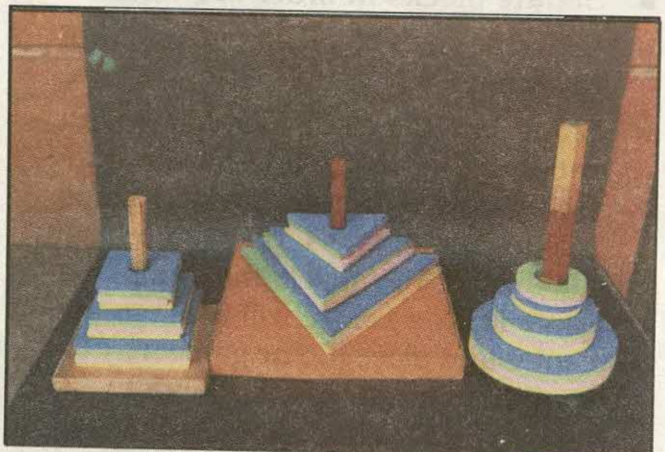


Fig. 3a

OBJECTIVES

- Cognitive skill
- Fine motor skill
- Eye-hand coordination
- Socio-emotional development

Square

3 Sizes : (i) 125 × 125 x 6mm - 4
(ii) 100 × 100 x 6mm - 4
(iii) 80 × 80 x 6mm - 4

In four colours: Red, Blue, Yellow and Green

Circle

3 Sizes : (i) 125 dia × 6mm - 4
(ii) 100 dia × 6mm - 4
(iii) 80 dia × 6mm - 4

In four colours: Red, Blue, Yellow and Green

Triangle

3 Sizes : (i) Half of 125 mm square - 4
(ii) Half of 100 mm square - 4
(iii) Half of 80 mm square - 4

In four colours: Red, Blue, Yellow and Green

Fig. 3b

How to use

Both free play and guided play can be arranged with the 36 pieces. For free play the set could be handed over to children individually or in a small group to play as they like.

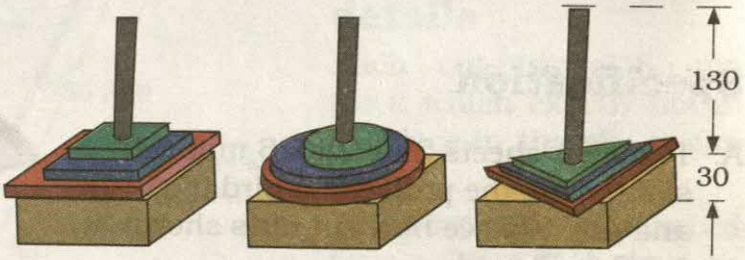


Fig. 3c

Guided play

(a) The child will sort out triangular, circular and square shapes separately.

(b) Shape seriation is the next play.

(c) Each child is given one piece and asked to see, feel and describe it.

(d) They will be asked to identify and match pieces of same colour.

(e) They will be asked to name objects in nature having the same colour as in the given piece.

If needed 48 pieces of item No. 8 may be combined with these 36 pieces to have more sizes for seriation and classification: colour-wise, shape-wise, thickness-wise.

Fig. 3d

For children with special needs

Visually challenged children may be guided to feel the profile of shapes and name them. They will also be able to seriate sizes, classify the shapes, count them.

Hints on construction from locally available materials

Thick cardboard, carton sheet, thermocole sheet, thick plastic or rubber or linoleum sheets, etc. could be used to make the shapes of given sizes. Those should be coloured appropriately.

4. Object Puzzle – 3 pc (2 sets), 6 pc (1 set)

Specification

A. Two EVA sheets 290×280×6 mm with a slot having the profile of a bird (Figs. 4a and 4d), 3-piece bird cut-outs shown at 1,2,3 in Fig. 4d.

B. Two EVA sheets 240×190×6 mm with slot having the profile of fruits (Fig. 4e), 3-piece fruit cut-outs shown as 1,2,3 in Fig. 4e.

C. 2 EVA sheets 310×270×6 mm with slot in the profile of a rabbit (Figs. 4c and 4f), 6-piece rabbit cut-outs shown at Fig. 4f.

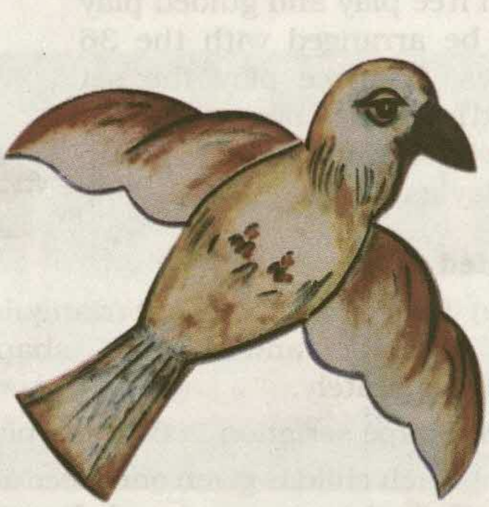


Fig. 4a

OBJECTIVES

- Motor skill
- Eye-hand coordination
- Aesthetic development
- Self-confidence

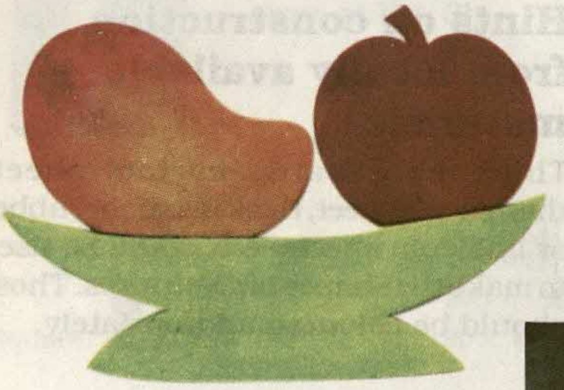


Fig. 4 b

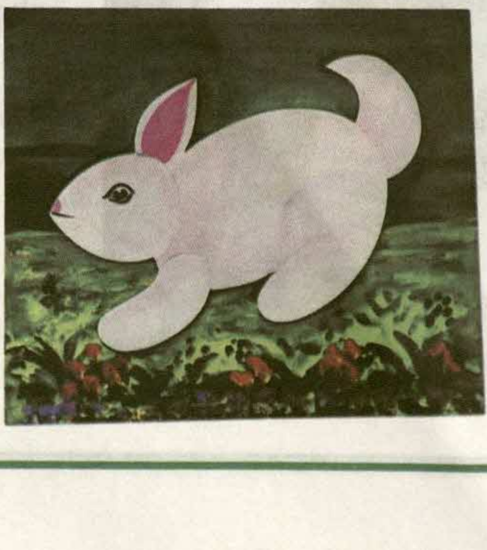


Fig. 4c

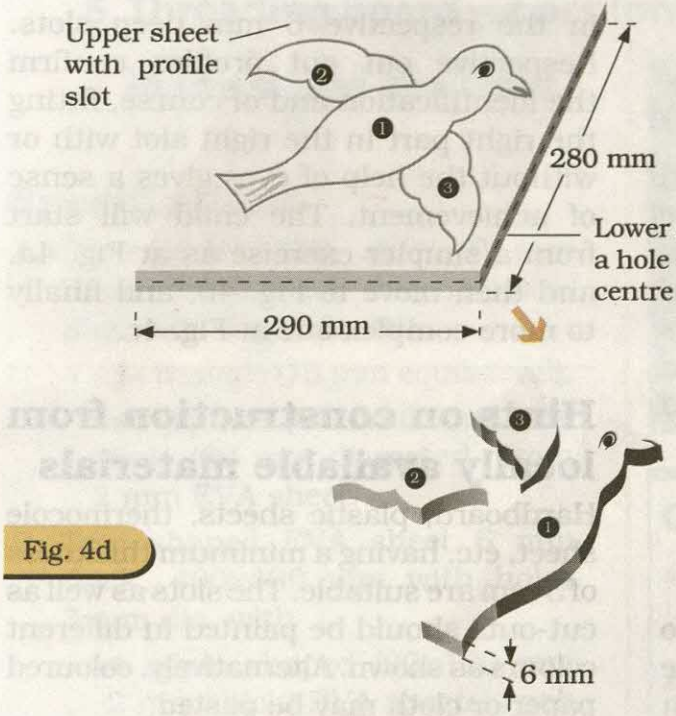

Upper sheet with profile slot
280 mm
Lower sheet with a hole φ10 at the centre
290 mm
6 mm
1
2
3

Fig. 4d

Constructional details

Each cut-out is 6 mm thick which exactly fits in its place in the slot 6 mm deep.

The cut-outs are punched from a 6 mm EVA sheet on a press. The punched off cut-out obviously fits in the corresponding slot on the sheet which in glued to another 6mm sheet. A hole at the lower sheet (Fig. 4d, 4e and 4f) is provided so that the object pieces can be easily knocked out by one finger.

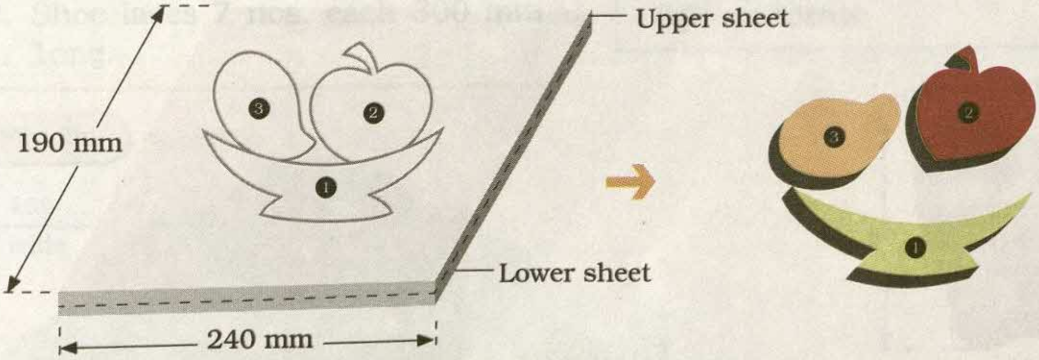


Fig. 4e

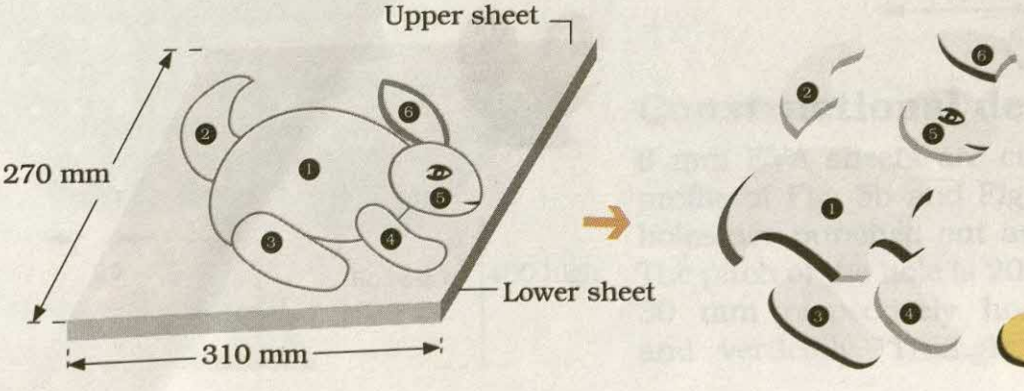


Fig. 4f

How to use

- Indoor activity
- Individual activity

Instinctively the child (also an adult) tries to fit the parts of the bird or the fruit or the rabbit in respective slots. The successful child becomes overjoyed and wants to share joy with others and take credit. If the elder claps in appreciation, the child does it over and over again.

For children with special needs

This puzzle gives unique experience to such children to feel the profile of the fruit, parts of the bird and the rabbit in the respective 6 mm deep slots. Respective cut out profiles confirm the identification and of course, fitting the right part in the right slot with or without the help of eyes gives a sense of achievement. The child will start from a simpler exercise as at Fig. 4a, and then move to Fig. 4b, and finally to more complex one at Fig. 4c.

Hints on construction from locally available materials

Hardboard, plastic sheets, thermocole sheet, etc. having a minimum thickness of 3 mm are suitable. The slots as well as cut-outs should be painted in different colours as shown. Alternatively, coloured paper or cloth may be pasted.

II. MATERIALS FOR FINE MOTOR SKILL

5. Threading Board – 2 pcs (one plain perforated, other in the shape of a tree)

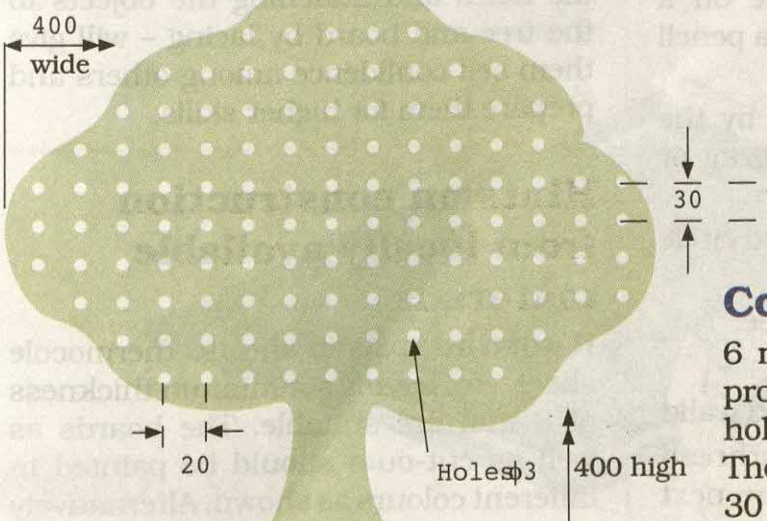
Specification

A. Rectangular EVA sheet 6 mm thick, 250×200mm with 64 holes, 3 mm dia (Fig. 5d), with
   - one triangle (75 mm equilateral), one square (60 mm), and one circle (60 mm diameter) from 2 mm EVA sheet.

B. Tree shaped EVA sheet 6 mm thick, 400×400 mm with holes 3 mm dia, with
   - 4 apple shaped (90×100 mm 2 mm thick) EVA sheets, each having 6 holes

C. Shoe laces 7 nos. each 300 mm long

Fig. 5b



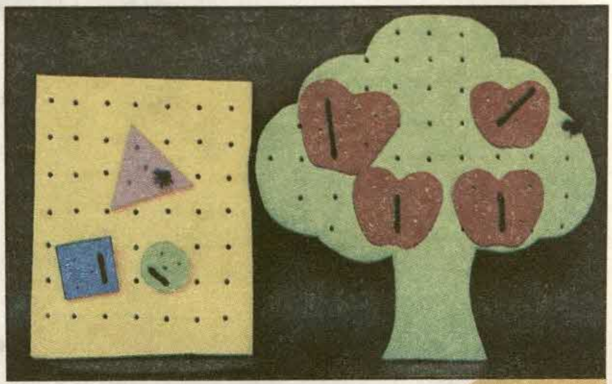


Fig. 5a

OBJECTIVES

- Fine muscular coordination
- Eye-hand coordination
- Concentration in work
- Creativity
- Self-confidence

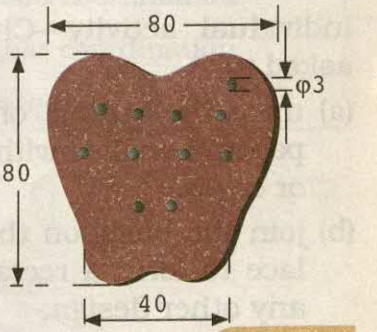


Fig. 5c

Constructional details

6 mm EVA sheets are cut in the profile of Fig. 5b and Fig. 5d and holes are punched out as shown. The pitch of the hole is 20 mm and 30 mm respectively horizontally and vertically. Triangle, square,

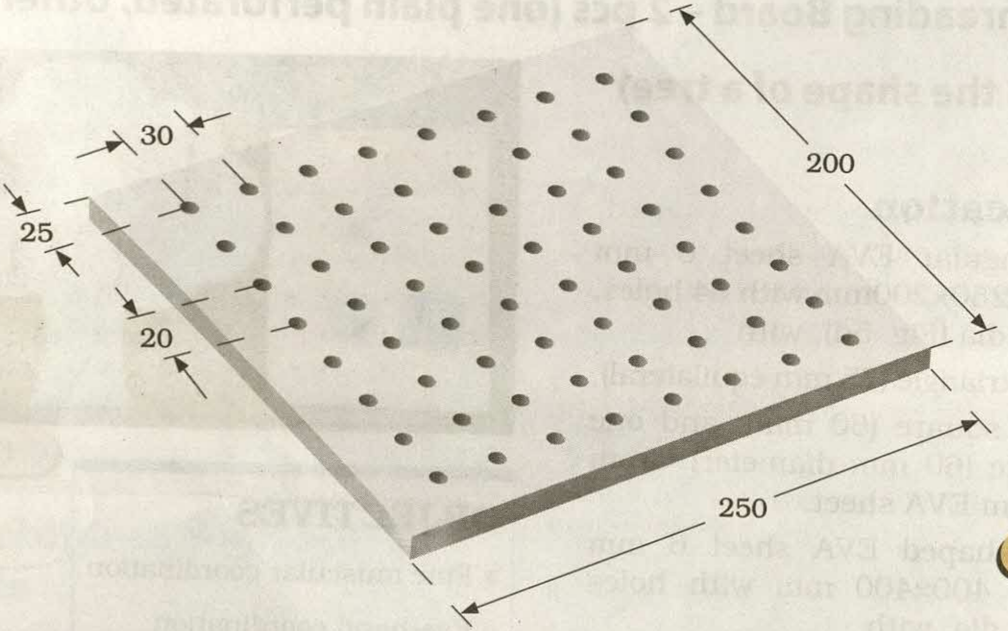


Fig. 5d

rectangle and apple profiles are cut from 3 mm EVA sheet in colours as shown.

How to use

Individual activity—Children will be asked to

(a) trace the outline of the tree on a paper or on floor with help of a pencil or crayon;

(b) join the holes on the board by the lace to form a rectangle, zigzag or any other design;

(c) thread the triangle, square and circle on to the rectangular board;

(d) thread the apples onto the tree;

(e) join the two boards by lacing;

(f) balance the board on head and walk;

(g) finally the child is asked to unthread and pass on the board to the next child to start from (a).

For children with special needs

The activities mentioned above are extremely useful for Inclusive Education. Feeling number of holes on the tree or on geometrical shapes, on apples, matching the holes and attaching the objects to the tree and board by lacing – will give them self confidence among others and prepare them for higher skills.

Hints on construction from locally available materials

Hardboard, plastic sheets, thermocole sheet, etc. having a minimum thickness of 3 mm are suitable. The boards as well as cut-outs should be painted in different colours as shown. Alternatively coloured paper or cloth may be pasted.

6. Velcro Slate-cum-Chalkboard (with chalks)

Specification

(a) Chalkboard (hardboard painted in blackboard paint) 280×230 mm with frame and with velcro strips pasted on the back side.

(b) Discarded hollow plastics transparent ball pen body, dia 10 mm × 130 mm long.

(c) Woollen thread (2 ply), 5 metre long.

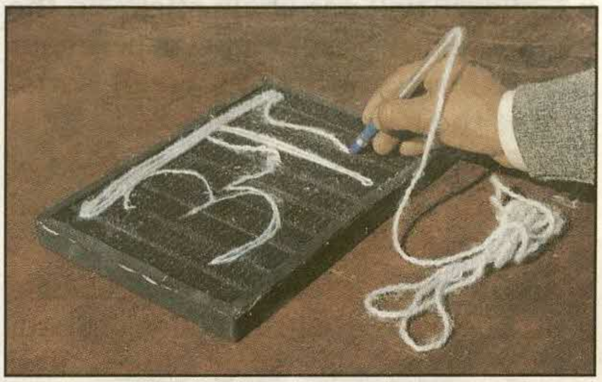


Fig. 6a

Constructional details

On one side of a 230×280 mm chalkboard, velcro strips with bristles are pasted. Woollen thread sticks to Velcro bristles rigidly just on touch. Using this principle woollen thread is passed through a rejected hollow body of a ball pen. Now one can 'write' on the velcro holding the pen to produce woollen writings (Fig. 6 a, 6 c). Even adults will enjoy 'drawing' any object holding the pen

OBJECTIVES

- Fine motor skill development
- Eye-hand coordination
- Muscular coordination
- Creativity

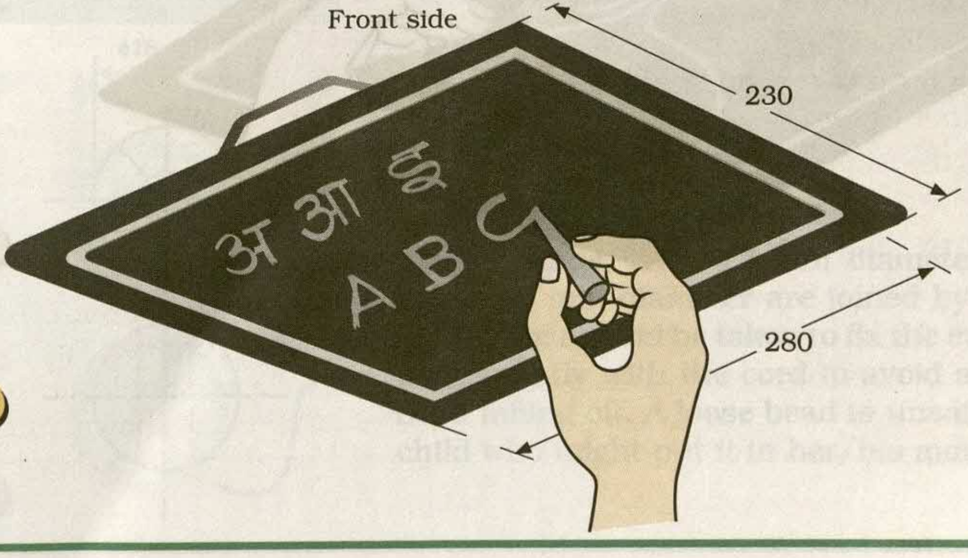


Fig. 6b

How to use

- It is an indoor individual activity.
- Children will use chalk sticks on the chalkboard. They enjoy to experiment with lines and curves of all sorts, wipe them and again draw.
- They get the feel of degree of smoothness on the frame, hardboard and rough Velcro.
- As they are guided to 'draw' objects on the Velcro with woollen thread, they enjoy 'drawing' lines and curves on velcro and doing all sorts of experiments with this.
- Retrieving the used woollen thread and reusing the same through the 'pen' is yet another experience for them.

For children with special needs

The texture of frame of the board, chalkboard and velcro surfaces are very useful to give them the experience of degrees of surface roughness. The visually impaired cannot see or feel her/his writings on the chalkboard, but can feel 'writings' on Velcro as s/he can trace the woollen thread on velcro with fingers.

Hints on construction from local materials

Hardboard sheet can be easily painted with blackboard paint. Velcro strips are now available in stationery shops. Each strip is 25 mm wide. These can be glued to the hardboard permanently. Black velcro and white wool will give best contrast.

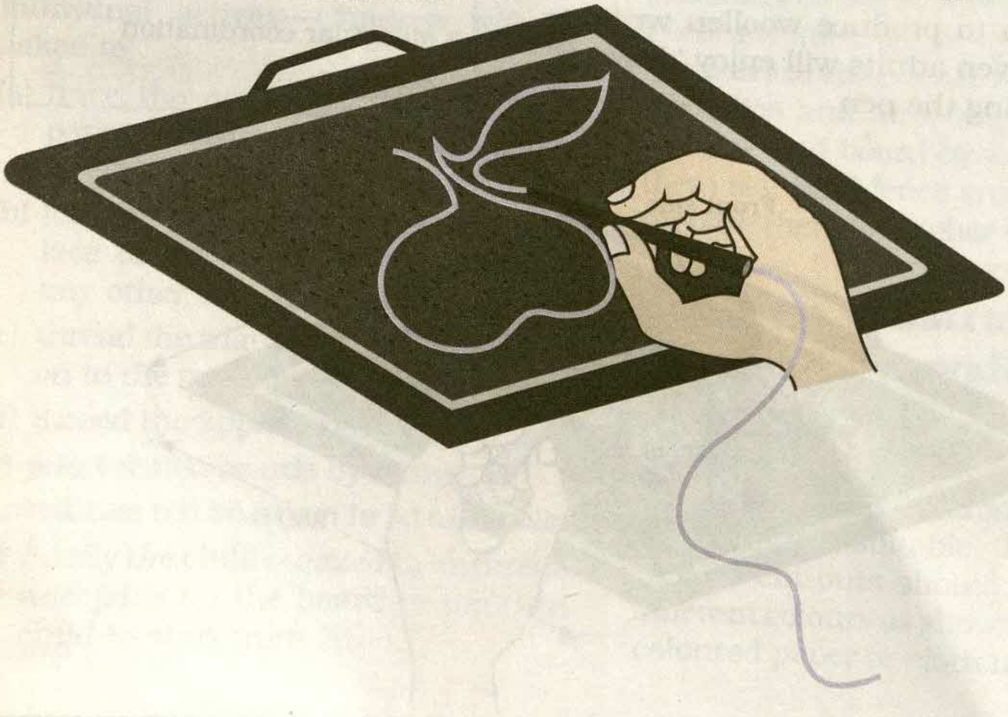


Fig. 6c

7. Beads with Strings

Specification

A. Plastic beads 18 mm diameter with 6 mm dia hole, 72 nos. in 6 colours for example, red, blue, green, yellow, white, black: 12 beads in each colour

B. Silk cord 2 metre long.

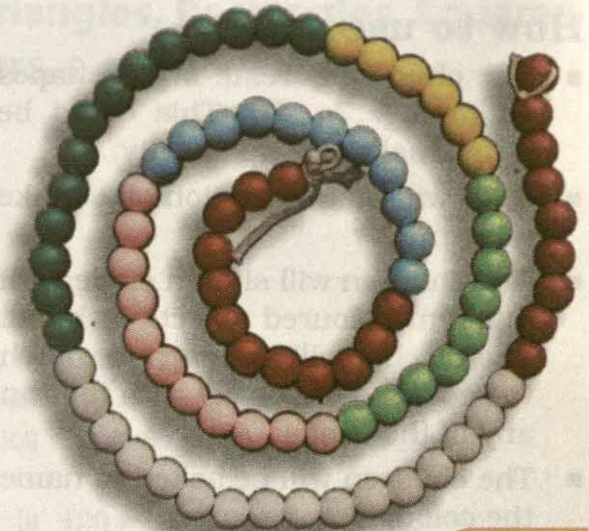


Fig. 7a

OBJECTIVES

- Eye-hand coordination
- Fine motor skill
- Cognitive skill
- Concentration in work
- Social Skill
- Creativity

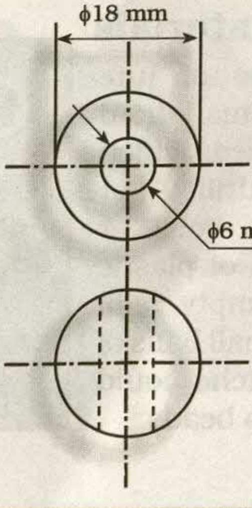


Fig. 7b

Constructional details

Plastic beads, each 18 mm diameter with a hole of 6 mm diameter are joined by the silk cord. Care should be taken to fix the end beads permanently with the cord to avoid any loose bead falling off. A loose bead is unsafe for the child who might put it in her/his mouth.

How to use

- The child will create many shapes as in Fig. 7c, 7d. This could be individual or group activity.
- They will imitate motion of a snake or a train.
- The children will sit in a circle with different coloured objects in hand. The teacher will ask each to match the colour of an object with that on any of the beads.
- The children will be asked to name the colour.
- If the child knows counting already, s/he will be asked to count beads in each colour band.
- The child will be asked to count the beads by feeling with fingers (closing the eyes).

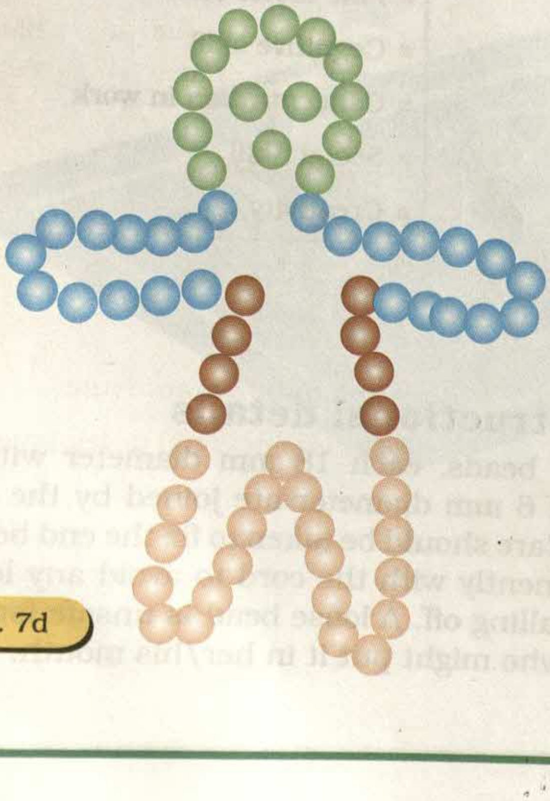


Fig. 7d

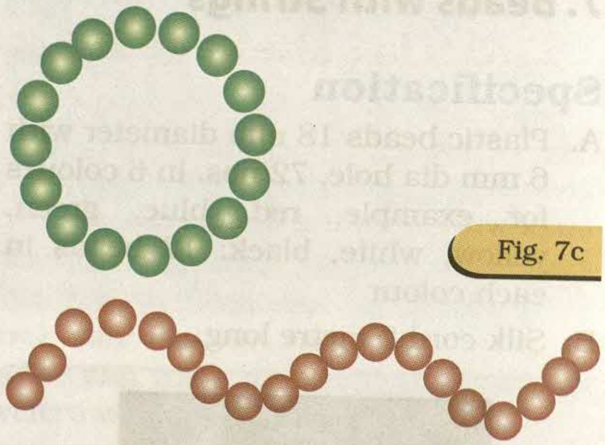


Fig. 7c

For children with special needs

As the beads are reasonably big, creating different profiles (examples shown in Fig. 7 c, 7d) with these will be very enjoyable. Lifting the chain gives the perception of mass of 72 beads. It can be pulled on the floor. Holding beads between the palm and fingers or thumbs and fingers one by one while feeling its shape or counting is a part of physiotherapy needed by some.

Hints on construction from local materials

Cut pieces of jute sticks or small dried fruits or seeds which could be drilled (for making a hole) or cut pieces of plastic body of empty refill pens or small balls of papier mache could be used as beads.

8. Simple Geometrical Shapes (Triangles, Rectangles, Squares, Circles in 3 sizes, and in 3 colours, e.g. RBY-48 pcs)

Specification

Geometrical shapes from EVA sheet with following dimensions:

Rectangle

3 Sizes : (i) 240 × 120 × 3 mm - 4 Red
(ii) 180 × 90 × 3 mm - 4 Blue
(iii) 120 × 60 × 3 mm - 4 Yellow

Square

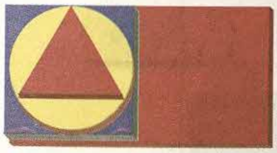
3 Sizes : (i) 120 × 120 × 3 mm - 4 Red
(ii) 90 × 90 × 3 mm - 4 Blue
(iii) 60 × 60 × 3 mm - 4 Yellow

Circle

3 Sizes : (i) 120 dia × 3 mm - 4 Red
(ii) 90 dia × 3 mm - 4 Blue
(iii) 60 dia × 3 mm - 4 Yellow

Triangle

3 Sizes : (i) 105 mm equilateral × 3 mm - 4 Red
(ii) 78 mm equilateral × 3 mm - 4 Blue
(iii) 52 mm equilateral × 3 mm - 4 Yellow



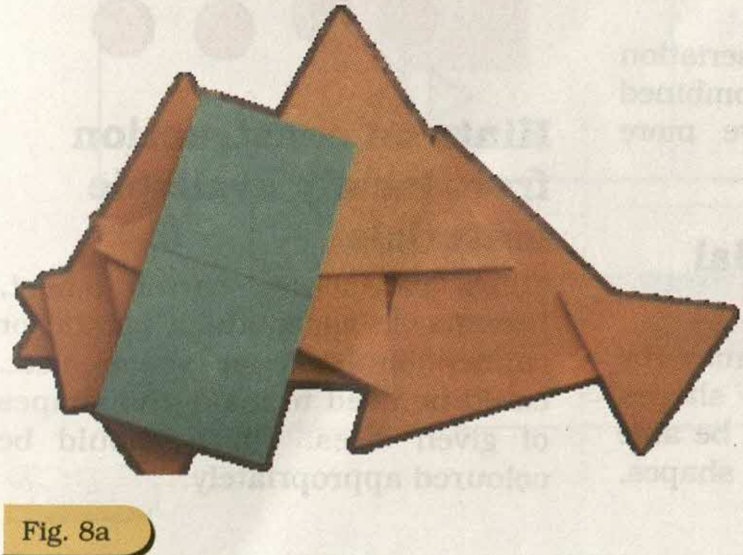


Fig. 8a

OBJECTIVES

- Cognitive skill
- Fine motor skill
- Eye-hand Coordination
- Socio-emotional development
- Creativity

Constructional details

Rectangles, squares, circles and triangles are punched out from 3 mm EVA sheets as specified above.

How to use

Both free play and guided play can be arranged with these 48 pieces. For free play the set should be handed over to the children individually or in a group to play as they like.

Guided Play

- The child may be guided to do activities at (a) to (e) as given in item No. 3 (shape seriation figures)
- Simple shapes like those at 8b, 8c may be made with the 48 pieces and shown to children who will create new simple shapes.
- Then children will be shown more complex shapes as at Fig. 8d (1-7) so that they may compose many other shapes.

If needed, 36 pieces of shape seriation figures (item No. 3) may combined with these 48 pieces to have more combinations.

For children with special needs

Visually challenged children may be guided to feel the profile of shapes and name them. They will also be able to seriate sizes, classify the shapes, count them.

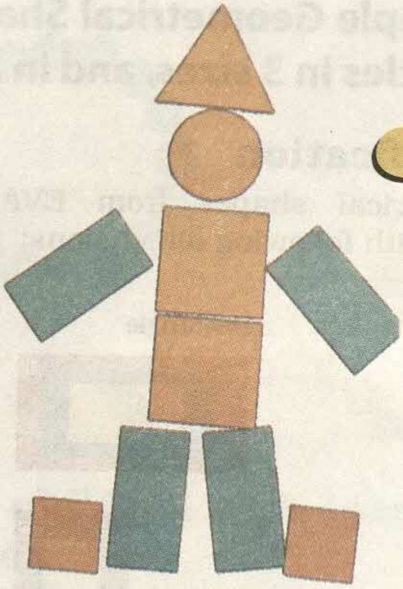


Fig. 8b

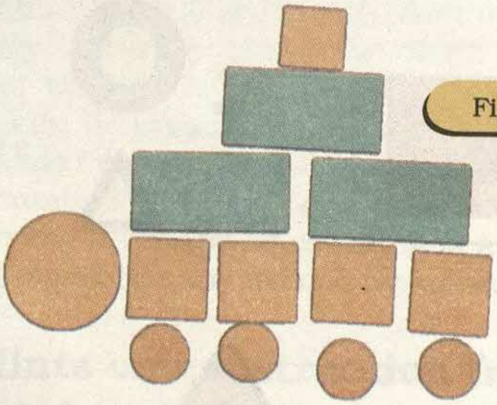


Fig. 8c

Hints on construction from locally available materials

Thick cardboard, carton sheet, thermocole sheet, thick plastic or rubber or linoleum sheets, etc. could be used to make the shapes of given sizes. Those should be coloured appropriately.

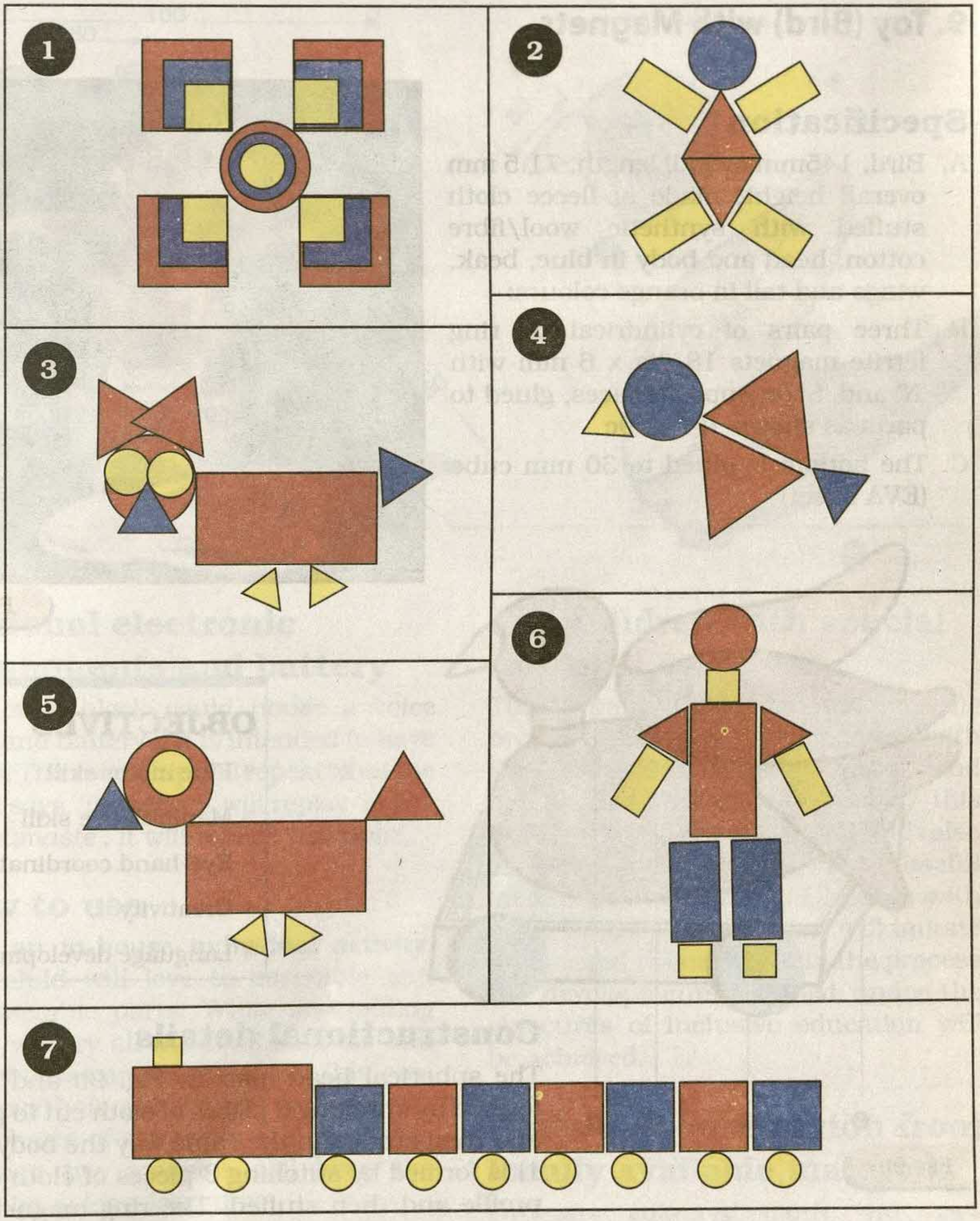


Fig. 8d

9. Toy (Bird) with Magnets

Specification

A. Bird, 145mm overall length, 71.5 mm overall height, made of fleece cloth stuffed with synthetic wool/fibre cotton, head and body in blue, beak, wings and tail in orange colours:

B. Three pairs of cylindrical or ring ferrite magnets 18 dia × 6 mm with 'N' and 'S' on opposite faces, glued to parts as shown at Fig. 9c

C. The bottom is glued to 30 mm cube (EVA sheet)

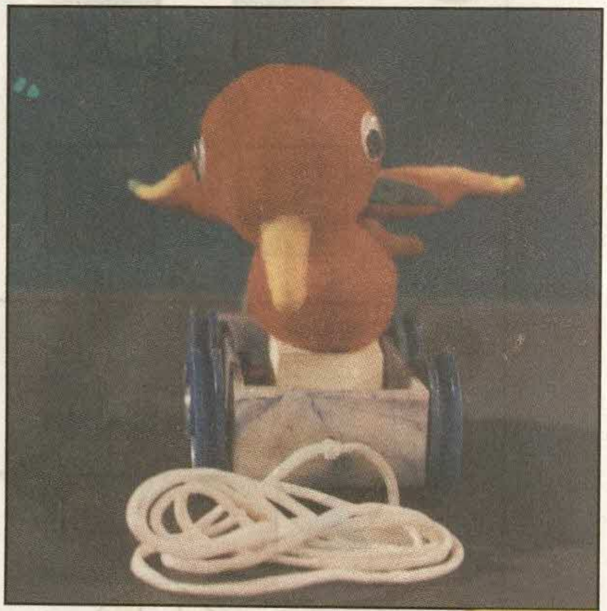


Fig. 9a

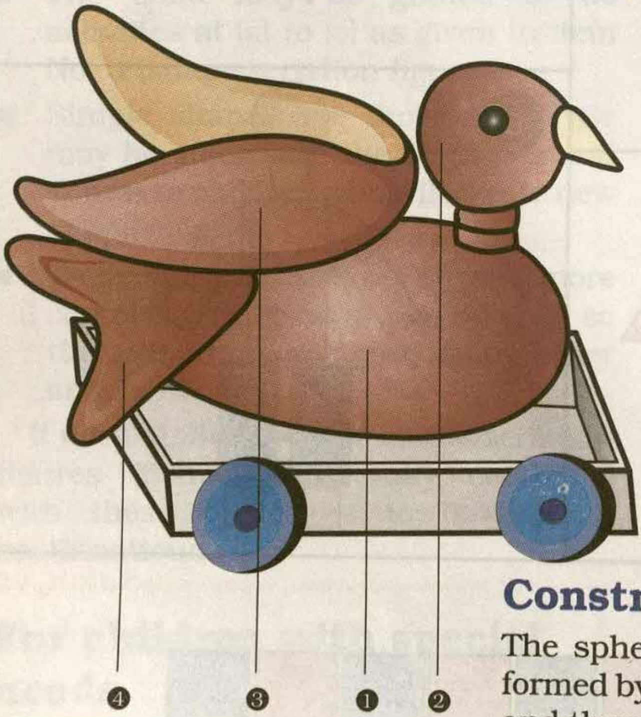


Fig. 9b

OBJECTIVES

- Fine motor skill
- Manipulative skill
- Eye-hand coordination
- Creativity
- Language development

Constructional details

The spherical head (part 2, Fig. 9b and 9c) is formed by stitching 6 pieces of cloth cut to profile and then stuffed in the same way the body (part 1) is formed by stitching 3 pieces of cloth cut to profile and then stuffed. The ring magnets are firmly glued and stitched at proper places and finally the assembled body is glued to the 30 mm cube of EVA.

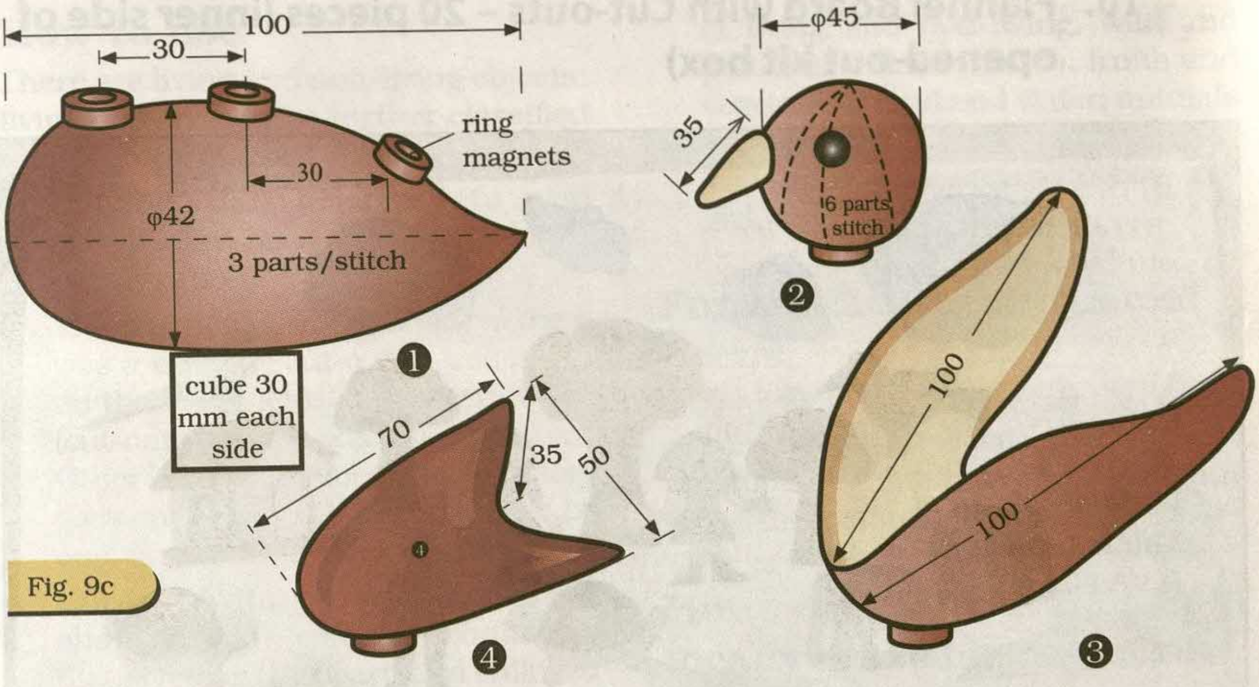


Fig. 9c

Optional electronic components and battery

The cube block could house a voice chip and battery if it is intended to have them. The voice chip will repeat what the child says. To 'hello' it will replay 'hello'. To *'namaste'*, it will replay *'namaste'*.

How to use

It is an in-house individual activity. The child will love to assemble and disassemble parts. While assembling s/he will try all the combinations and possibilities and wait for her/his own approval before showing it to the elders. The charm of attraction and repulsion between two magnets will keep the child busy for a long time.

The child will enjoy pulling the trolley (item no. 16) with the bird as passenger.

For children with special needs

The visually challenged will feel the profile of the bird while playing with the orientation of head, wings and tail. In fact this child will enjoy this play better if the normal child also joins her/him. This toy will be useful for inclusive education. Children with other forms of impairment will imitate the normal children and in the process the developments outlined under the objectives of inclusive education will be achieved.

Hints on construction from locally available materials

Ordinary coloured cloth with raw cotton or wool as stuffing material can be used.

16283

III. MATERIALS FOR LANGUAGE DEVELOPMENT

10. Flannel Board with Cut-outs – 20 pieces (inner side of opened-out kit box)

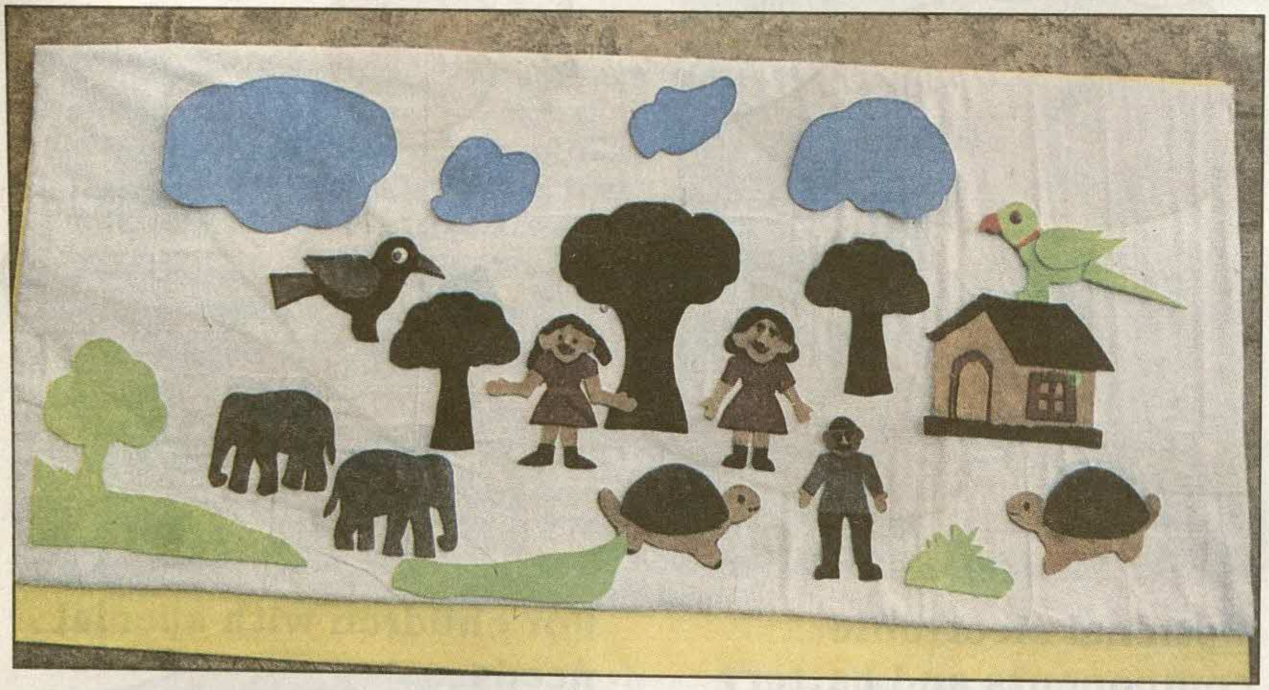


Fig. 10

Specification

A. Twenty cut-outs as shown in Fig. 10 cut from flannel or felt cloth are simply pressed by hand onto the felt cloth (1mm thick) and they cling to the felt surface and do not fall off.

B. A felt cloth 1250×550 mm attached as lining to the inner side of the opened out kit box (Fig. 21c).

Constructional details

The felt piece of above size as well as the cut-out pieces are cut from felt cloth with a pair of scissors.

The opened out kit box with felt cloth as inner lining can be put on the floor, or put against vertical walls (see Fig. 21c).

OBJECTIVES

- Language development
- Social skill (working in a group)
- Creative thinking
- Identification of objects in the environment
- Imagination
- Self-confidence

How to use

There are living and non-living objects; living objects may be further classified into plants, animals, birds, etc.

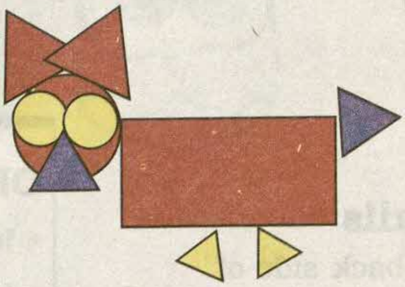
- Children may be asked to read or display cut-outs and start conversation.
- The teacher may tell a story: there was a tree (the cut-out of tree is put on the blank felt). There lived a bird (cut-out of bird is placed on the tree). Other cut-outs appear as the story goes on. Chance to children, one by one, is given to extend the story.
- Cut-outs with various geometrical shapes and colours could be displayed on the board and children could be asked to match one of those lying on the floor with the one on the board.
- Teacher will prepare more cut-outs so as to display many examples of living and non-living, wild and domestic animals, birds, fruits and vegetables, land and water, animals on land and in water, small plants and trees, sun and rain, boy and girl, etc.

For children with special needs

This play is another example where children with special needs could participate in story-telling and thus share their imagination with peers.

Hints on construction from locally available materials

Plyboard and flannel/felt cut-outs will also work. In this case the edges of plyboard need be properly smoothened so as to save the child's finger from injury.



Library

11. Masks (head masks, 5 characters)

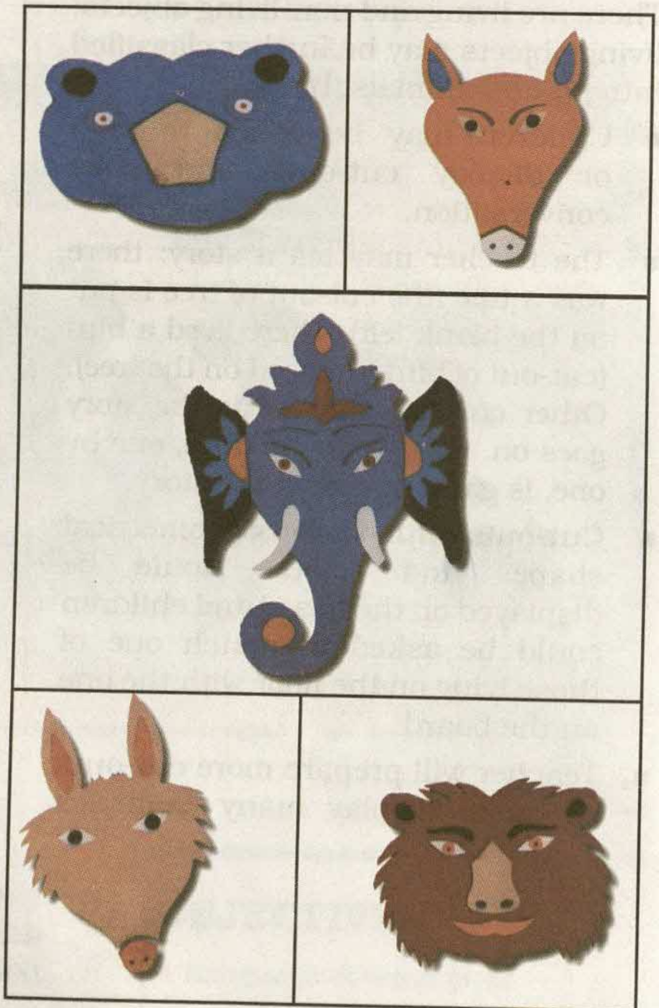


Fig. 11a

Specification

A. Five masks representing five characters are made from 1 mm EVA sheet. Any mask should completely cover the face from head to chin and two ears. The colour of the masks have been shown in Fig. 11a.

B. A head band made from 1 mm EVA sheet (Fig. 11b) has to be glued to the back side of the mask.

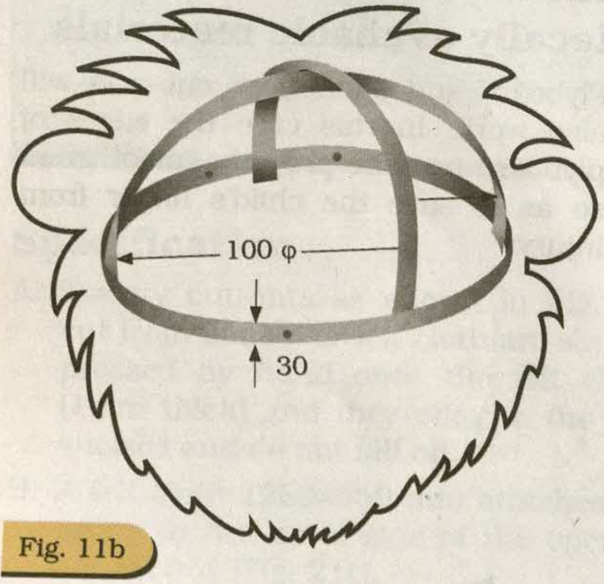


Fig. 11b

Constructional details

Head band is glued to the back side of the mask so that the mask remain in position while running or jumping.

OBJECTIVES

- Imagination
- Language development
- Social skills

How to use

This can start as a guided activity to be gradually taken over by a group of children as free play. The teacher will ask the masked child to walk or jump in the same manner this animal does. Teacher will give exemplary dialogue as starter. Then the children will take over, give expression to their imagination in the presence of the teacher.

For children with special needs

They will enjoy the animals being enacted by the normal students and obviously will join them and give dialogues on the basis of their own impression about the world. They might overcome their shyness through such activities.

This play is another example where children with special needs could participate in story telling and thus share their imagination with peers.

Hints on construction from locally available materials

Mask making from local materials has been detailed in page 76.

12. Finger Puppets – 3 pcs

Specification

Three puppets; material-fleece cloth

1. Crow: 230 long × 75 wide with head 45 mmφ
2. Parrot: 250 long × 65 wide with head 45 mmφ
3. Rabbit: 160 long × 80 wide

Colour scheme is given in Figs. 12c, 12d and 12 e. Each puppet has a small pocket at the bottom (Fig. 12b) so that the index and middle fingers can be inserted in it for manipulation.

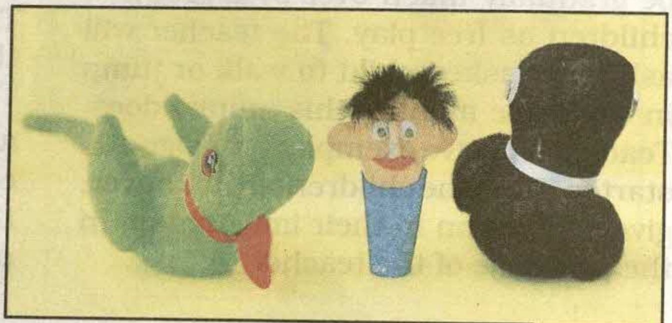


Fig. 12a

OBJECTIVES

- Socio-emotional development
- Language development
- Imagination
- Creativity

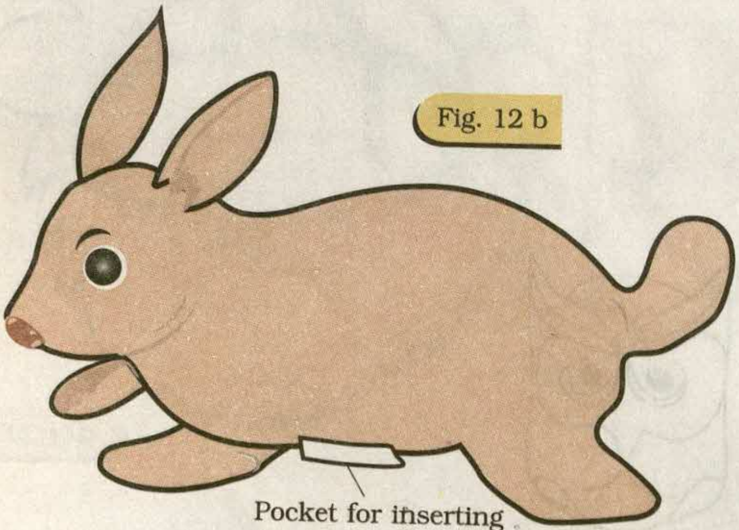


Fig. 12 b

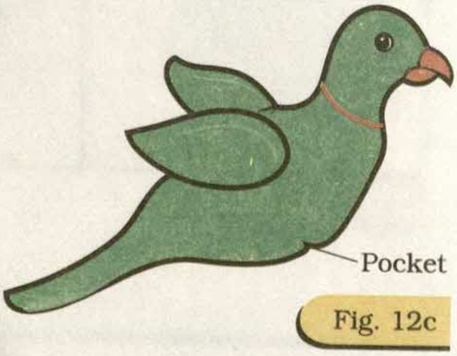


Fig. 12c

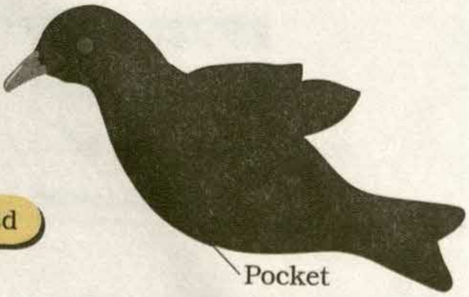


Fig. 12d

Constructional details

Sizing fleece cloth, stitching, stuffing with synthetic wool/fibre cotton – same as described in case of item No. 9.

How to use

Guided play — The teacher will take this puppet on finger and manipulate it with some dialogue. To make it more dramatic s/he hides behind a chair or table keeping only the puppet in view and moving it over the chair back rest or table. S/he will ask another child to join her with another puppet. Then the two puppets are in conversation with dialogues from behind.

Free play — Children in small groups now decide dialogue for the puppets and manipulate them in the same manner the teacher did.

For children with special needs

They overcome shyness as others in the classroom try to put up shows and try their skill in manipulating finger puppets. Visually impaired children feel the profile of puppets and identify the particular bird or animal. Once the teacher mimics the sound of that bird or animal, the child practises the same. This media of puppetry is to be exploited by the teacher for the promotion of inclusive education.

Hints on construction from locally available materials

Materials for puppets shown in Fig. 12a to 12e are available locally, at least coloured cotton cloth is available. Buttons could be used as eyes. Trained hands are required for cutting and stitching cloth.

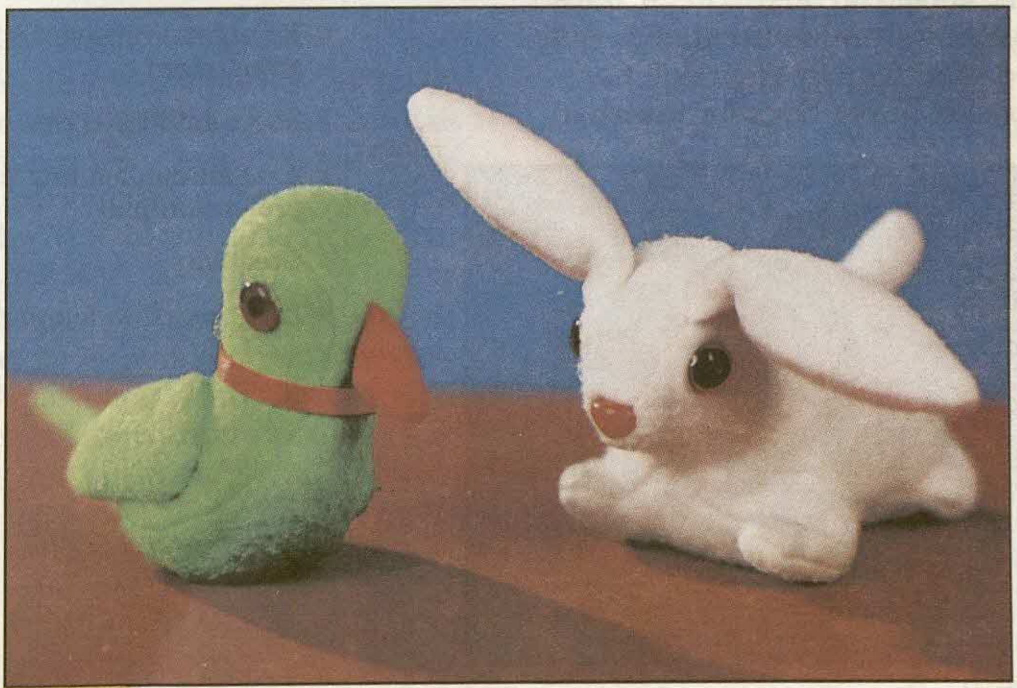


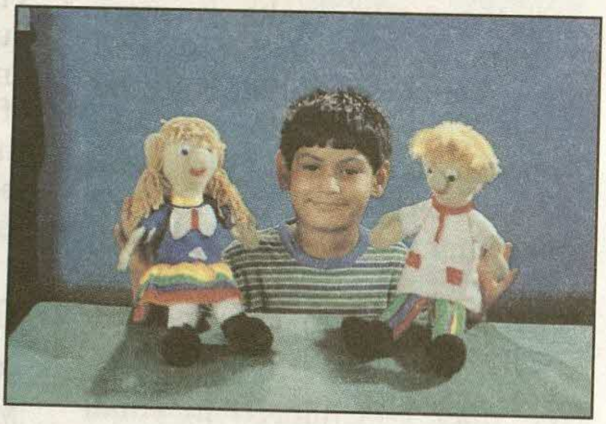
Fig. 12e

13. Doll-cum-Glove Puppet (1 male, 1 female)

Specification

Two dolls: one girl, one boy – each 380 mm tall with a chest of 100 mm, other body proportions are according to standard anthropometrics.

1. Legs, hands, neck are flexible
2. Shirt/top of each dress has zip as well as buttons
3. Fleece cloth is stuffed with synthetic wool/fibre cotton; doll's hair is from woollen thread; colour combination is given in Fig. 13.



Constructional details

Method of making is similar to what is shown at item No. 9. Lips and eyebrows are embroidered, not painted. Additionally each doll has a deep pocket at the back for insertion

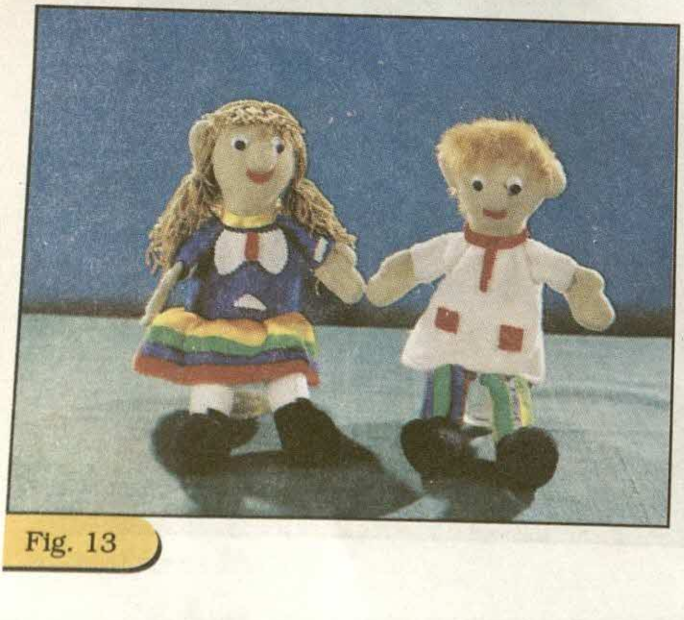
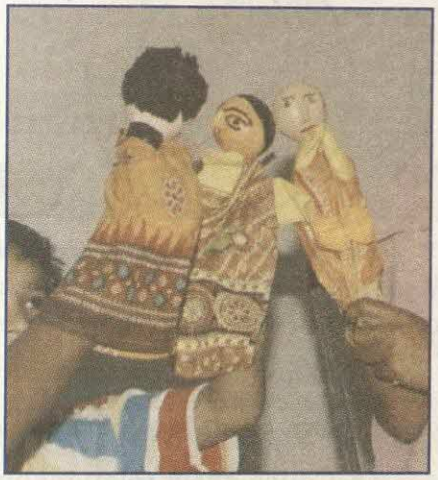


Fig. 13

OBJECTIVES

- Motor skill development
- Emotional release and adjustment
- Socio-emotional development
- Imagination leading to pretention play
- Creativity
- Language development



of the hand of the manipulator who manipulates the doll by moving hand, wrist, palm and fingers, so that the viewer sees the puppet moving its head, hands, bending its neck, etc.

How to use

First of all, the child feels the soft touch of the doll as s/he takes it on her/his lap or shoulder. Generally the child touches her/his chest with that of the doll as the head of the doll rests on the child's shoulder.

This facilitates free play individually as well as by a small group. Pretention play or role play is at its best with dolls. Celebration of doll's birthday and wedding are popular among children through ages.

For children with special needs

Playing with dolls evokes concentration besides triggering emotions leading to baby talks even for very shy children.

When the dolls are used as hand puppets by other children, children with special needs find this media funny and enjoyable, while the visually challenged enjoys the story in dialogue form, others requiring physical and mental development are immensely benefited as they try to manipulate puppets synchronising with dialogue.

Hints on construction from locally available materials

The teacher may use old cloth as cover, cotton/wool/cloth strips as stuffing materials, woollen thread as hair, buttons as eyes.

IV. MATERIALS FOR MOTOR SKILL DEVELOPMENT

14. Ball with Sound

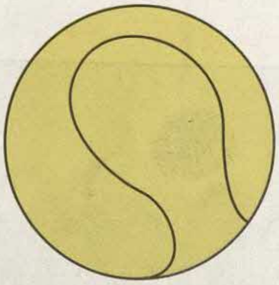


Fig. 14

OBJECTIVES

- Motor skill development
- Eye-hand-leg coordination
- Cause-effect relationship
- Socio-emotional development

Specification

Hollow rubber or low density plastic or rubberised plastic balls, 75 to 100 mm in diameter having two *ghungroo* bells inside, outer surface preferably covered with fleece cloth or wool. Soft and light stuffed ball with bells inside could also be used.

Colour preference—bright yellow. The ball should have lower bounce and slower movement on pucca floor in comparison to normal rubber ball and should not hurt the child being thrown at.

Constructional details

As given under specification

How to use

Ball is one of the earliest play materials in human history. It rolls on surface, it bounces, it spins. Receiving it requires activation of one set of muscles while throwing it requires activation of another set of muscles. Dribbling and kicking require activation of yet another set of muscles. Eye-limb coordination, reaction time, reflex, etc. improve with every throw or kick.

This could be individual play or group play, indoor play or out door play. Children 3-year-old and above love to play in a group of two – one serves, the other returns and vice versa, without a fixed target or goal. Children of this age group are very possessive; fight over ownership of the ball is very common. So the teacher might have to arrange more balls locally.

Children with special needs

In an environment where all children are at play, children with special needs will come forward and participate. Those requiring eye-hand coordination and motor skill development will be certainly benefited through this joyful play. The ball has sound so that the visually impaired may also play.

Hints on construction from locally available material

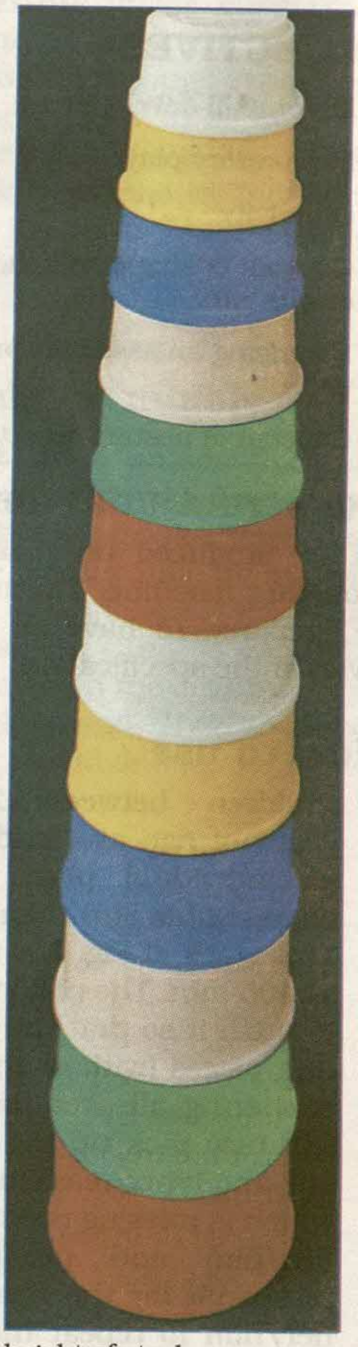
Details has been given at pages 64, 65, 77, 78, 79, items 12, 13 (toy ideas III), item 24 (toy ideas IV).

15. Stacking Cups

Specification

There are 12 plastic cups, stackable, each conical with diameter and thickness given in the table below. Colour of each and engraving on outside bottom are also given. While outside of each cup will be silky smooth, inside will have a definite texture different from others. Low cost version of cups will be stackable only (without finer dimensions or texture).

Cup	D_1mm	D_2mm	hmm	Colour	Engraving
1	81	79	52	Blue	Kingfisher
2	77	70	49	White	Cow
3	73.5	66	46	Green	Parrot
4	70	62	43	Black	Crow
5	66.5	60	39	Red	Rose
6	62	56	37	Yellow	Sunflower
7	60	53	34	Blue	Fish
8	55	49	32	White	Swan
9	52	45	29	Green	Tree
10	48	42	28	Black	Teddy bear
11	45	38	26	Red	Sun
12	42	35	24	Yellow	Tiger



height of stack
405 mm

Fig. 15a

OBJECTIVES

- Motor skill development
- Exploratory play
- Creativity
- Concept of shape, length, colour, etc.
- Balancing an assembly on palm
- Concept of nesting objects

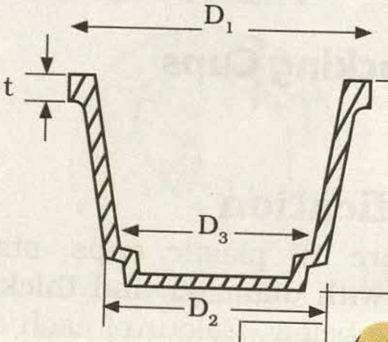


Fig. 15b

$D_2 - D_3 = 4$ mm

$t = 3$ mm

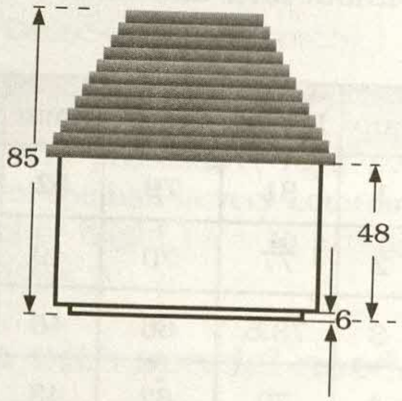


Fig. 15c

Constructional details

To be produced on plastic injection moulding machine. The mould has to be prepared to have all the features given in the specification.

How to use

- Children between 2½ and 5 years of age are fond of stacking as individual play. They stack, disassemble and then again stack. This stack at Fig. 15a is pretty high at 405 mm. The child will be happy to push it so that the tower breaks into pieces (with sound) with cups scattering all over the floor. S/he will now pick up the cups one by one and try to reassemble. Any cup which is missing is going to disturb her/him and prompt her/him to search for the correct one. For her/him to repeat the cycle again and again, the adults have to clap in appreciation.
- The child might find fun in nesting cups (Fig. 15c), otherwise the teacher may demonstrate nesting once.
- The cups could be used to collect soil; children will add water to make soil paste. If a child has not played with soil, s/he has missed something very important for development. S/he will be guided by the teacher to prepare in group soil tablets; the cup bottoms with engravings will be pressed on the wet tablets to get 12 different types of object outlines. Children will

take impression of their palms and fingers on wet soil tablets.

- The teacher will guide the child to balance
  - (a) the tower (Fig. 15a)
  - (b) nested cups (Fig. 15 c) on her/his palm. Now the teacher will ask her/him to walk with the tower kept erect on the palm. Let there be a game to find out who can walk how far with the tower in tact.
- Colour matching could be another play as there are 6 different colours on 12 cups.

For children with special needs

Both nesting and stacking will be enjoyable for these children. The visually challenged will be knowing better the shape of these cones of different sizes by feeling them. Particular texture inside cups could be another indicator for size or colour. They will know through trial and error that for a tower to be stable in standing, the base has to be broader than the peak. This inhouse individual activity will keep the child engaged with concentration.

Hints on construction from locally available materials

Paper cups (preferred over plastic cups) used for serving hot drinks, water, etc. are ideal. The teacher may try to make paper-cones of different sizes from thick paper sheet. Cups of each size have to be drawn on the drawing sheet (surface development). Then the piece has to be cut, rolled and joined.

16. Wheel Toy

Specification

Plastic trolleys 125×65×35 mm with 4 wheels φ 50×10mm with v-notch with

1. A rubber puck fitted on one side (Fig. 16b)
2. Two wheels pressfitted on each mild steel axle, ends of which are flattened.

Constructional details

The wheels are pressfitted on the two axles as shown in Fig. 16e. The axle ends are flattened so that wheels may not come out. A rubber puck is fitted to one vertical side (Fig. 16b) so that the trolley can stand on one end-face. The child can now rotate the wheel with her/his hand, use the wheel as a pulley to lift objects (Fig. 16d), join two wheels with a thread/ rubber band (rotation on one causes rotation on the other).

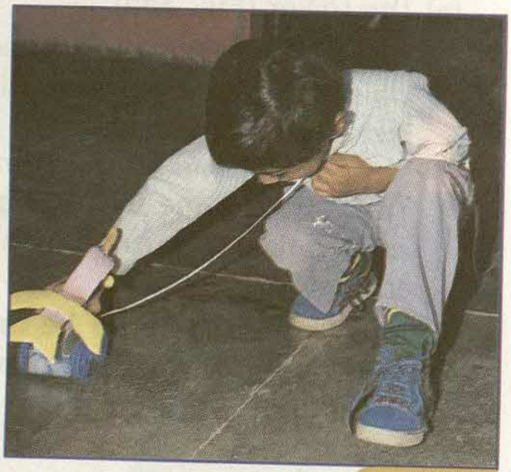


Fig. 16a

OBJECTIVES

- Motor skill development–gross and fine muscle coordination
- Observation–cause-effect relationship
- Language skill

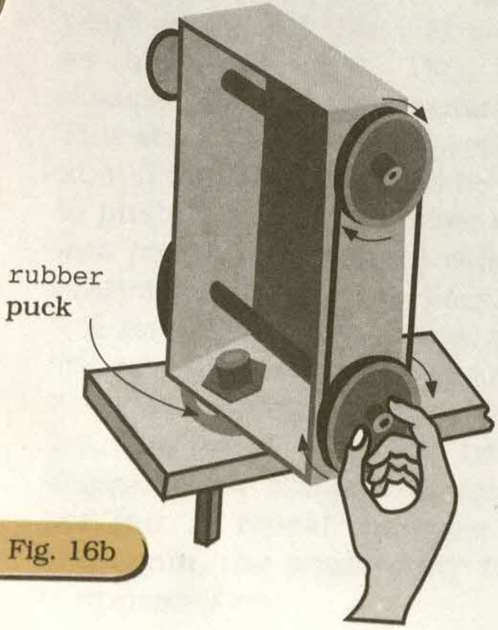


Fig. 16b

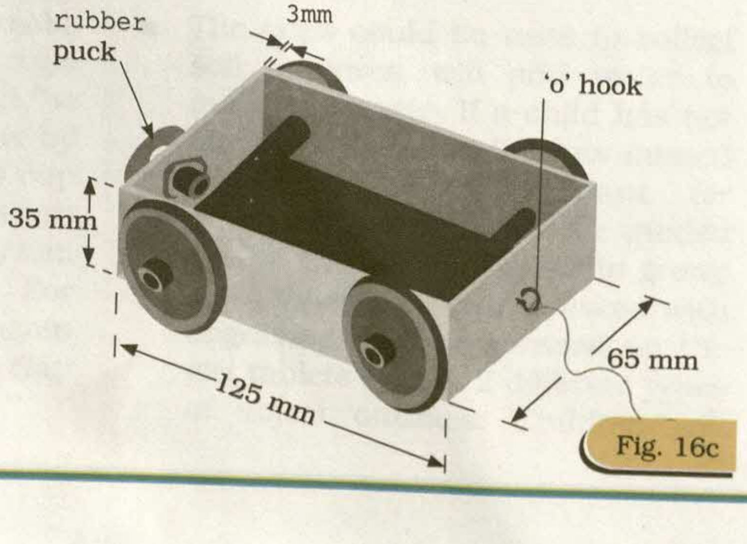


Fig. 16c

How to use

Teacher has to demonstrate once before this becomes a free play for an individual. The trolley will be pulled by the child as in Figs. 16a and 16c.

S/he will like to load the cart with sand, pebbles and other goods and then pull it. Here s/he will experience more force.

Then s/he puts the bird (item 9) in it and pull, observes what happens to the bird. S/he might talk to the bird while transporting it as a passenger.

When guided, the child will force the puck on the smooth table top and see that it sits rigidly. A rubber band belt will make the child curious about why the other pulley will rotate as the lower one is rotated by hand (Fig. 16b). S/he will keep on experimenting.

Teacher again guides her/him to remove the belt and use a thread to lift a small load. The child will imitate adults lifting a bucket of water from a well. S/he will pull the thread to lift; release it to lower the load, bang the load on the floor and keep on exploring.

For children with special needs

These children will extract enough fun through the activities suggested above. These activities will improve eye hand coordination and reaction time.

Hints on construction from locally available materials:

Trolley may be made from small cardboard or plastic boxes, discarded spools or reels. Local craftsmen will even prepare one from scrap wood using discarded carromboard coins or metal or plastic lids as wheels.

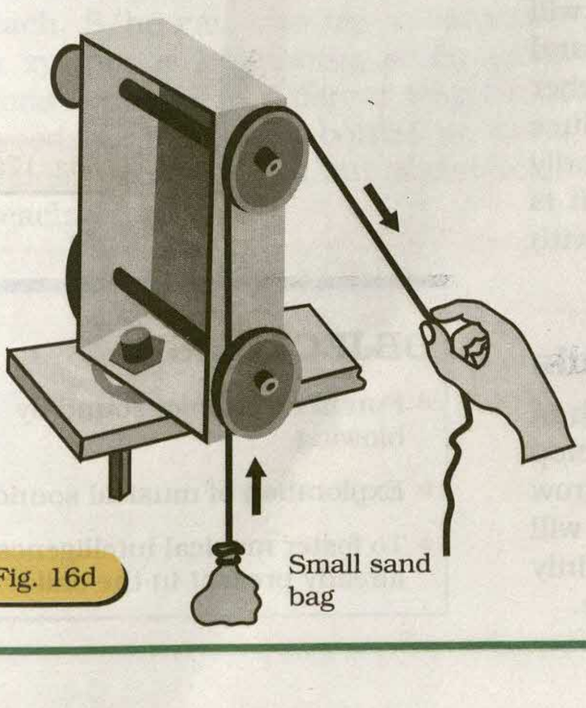


Fig. 16d

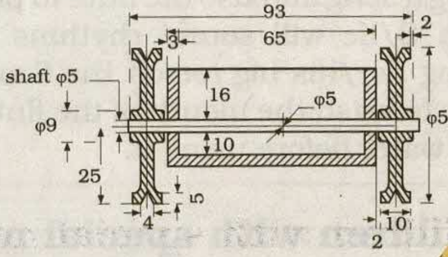


Fig. 16e

V. MUSIC AND RHYTHM

17. Flute

Specification

Normal flute (bamboo pipe) nearly 18mm dia × 280 mm long, with six round holes, one square hole and a solid wooden piece at the mouth to form constriction. It should produce seven standard musical sound frequencies on blowing.

Constructional details

The design at Fig. 17a has evolved through centuries. This is simply a toy, not a professional flute.

How to use

The teacher demonstrates the use. If s/he is a flute player, s/he will be able to contribute immensely to foster musical intelligence in the child. The flute could also be used in signalling the commencement or end of an event. If the children are in a circle, they will start walking with the sound of the flute and halt as soon as the flute stops. The teacher could sing a song and use the flute to produce interlude. S/he will sound rhythms loudly by tapping her/his big toe on the floor. It is advisable to wash the mouth of the flute with drinking water before using it.

For children with special needs

The visually challenged loves flute more than any other group and will most likely develop aptitude for playing flute when they grow up. For others, a tune played on flute will address their emotion and they will certainly try to produce sound by blowing the flute.

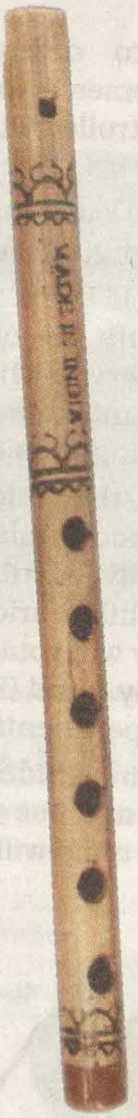


Fig. 17a

OBJECTIVES

- Fun in creation of sound by blowing
- Exploration of musical sound
- To foster musical intelligence already present in the child

Hints on construction with locally available materials

This flute itself is made from locally available material by local craftsman. If the intention is to produce whistling sound, the same can be produced by many methods e.g., by cupping both palms and blowing through the small gap between thumbs, by blowing through the small orifice produced by contracting the muscles of upper and lower lips, etc. By folding or rolling banana leaf or similar leaves one can make a whistle. A puppeteer's whistle is shown at page 60 (item 2, toy ideas III).

The teacher must prepare a *Jaltarang* by pouring water in seven glass bottles or tumblers, upto different levels in them and striking them with a metal spoon. The tuning is easily done by increasing or decreasing water level in each. S/he can also try to construct a zylophone by putting seven metal rods or pipes of different lengths on wooden rails. Glass bottles or metal pipes should be kept out of children's reach.

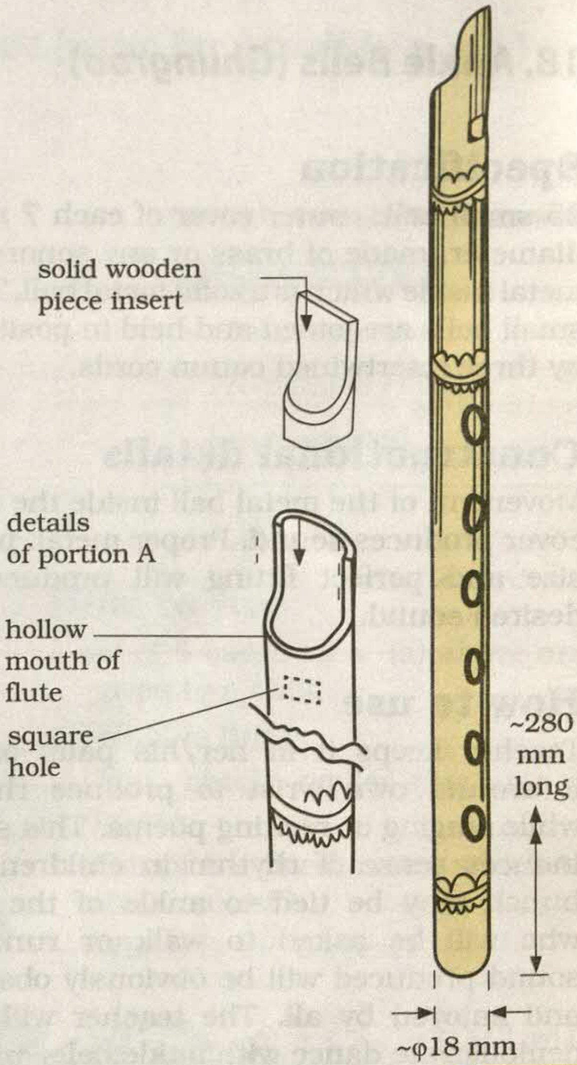


Fig. 17b

18. Ankle Bells (*Ghungroo*)

Specification

25 small bells, outer cover of each 7 mm diameter, made of brass or any sonorous metal inside which is a solid metal ball. The small bells are joined and held in position by three intertwined cotton cords.

Constructional details

Movement of the metal ball inside the metal cover produces sound. Proper metal, proper size and perfect fitting will produce the desired sound.

How to use

Teacher keeps it in her/his palm or ties it around own wrist to produce rhythm while singing or reciting poems. This sound induces sense of rhythm in children. The bunch may be tied to ankle of the child who will be asked to walk or run. The sound produced will be obviously observed and enjoyed by all. The teacher will then demonstrate dance with ankle bells on.

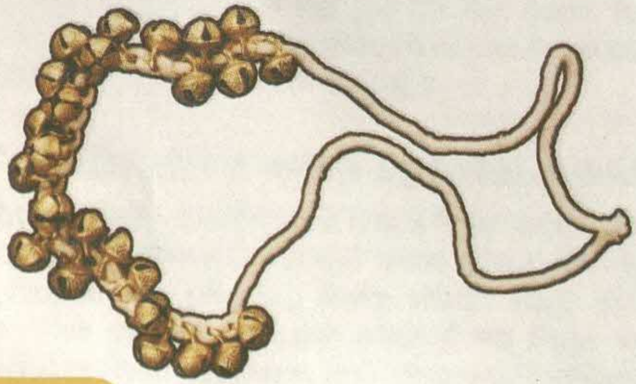


Fig. 18

OBJECTIVES

- Cause-effect relation
- Sense of rhythm

For children with special needs

If the bunch of bells are hidden but jerked to produce rhythmic sound, children will be curious to know the source of sound. Let them find it out by searching and then let them play with it one by one. The shy child will open out and try to show others her/his skill in producing sound.

Hints on construction from locally available materials

Ankle bells are easily available almost everywhere. However, the teacher may collect other forms of local bells used around the neck of animals, bigger brass bell with long stalk used by the priest in temples, etc. Even a bicycle bell will be useful as the child is tempted to push the lever by her/his thumb to produce a sound. This process contributes to her/his motor skill development besides creating fun.

VI. COGNITIVE DEVELOPMENT

19. Pre-number Concept Cards (near-far, small-big, etc.)

Specification

Fives thick cards each 175×125 mm having picture of

(a) Small to big houses in 5 steps as in Fig. 19a, 19b

(b) Thin to thick books in 5 steps

(c) Low to high stairs in 5 steps

OBJECTIVES

- Observation skill
- Pre-number concept
- Language skill

How to use

A set of 5 cards as at (a) above are given to a child.

— What is this?

The child replies–this is a house.

— Out of the five houses, which is the smallest?

— Which is the biggest?

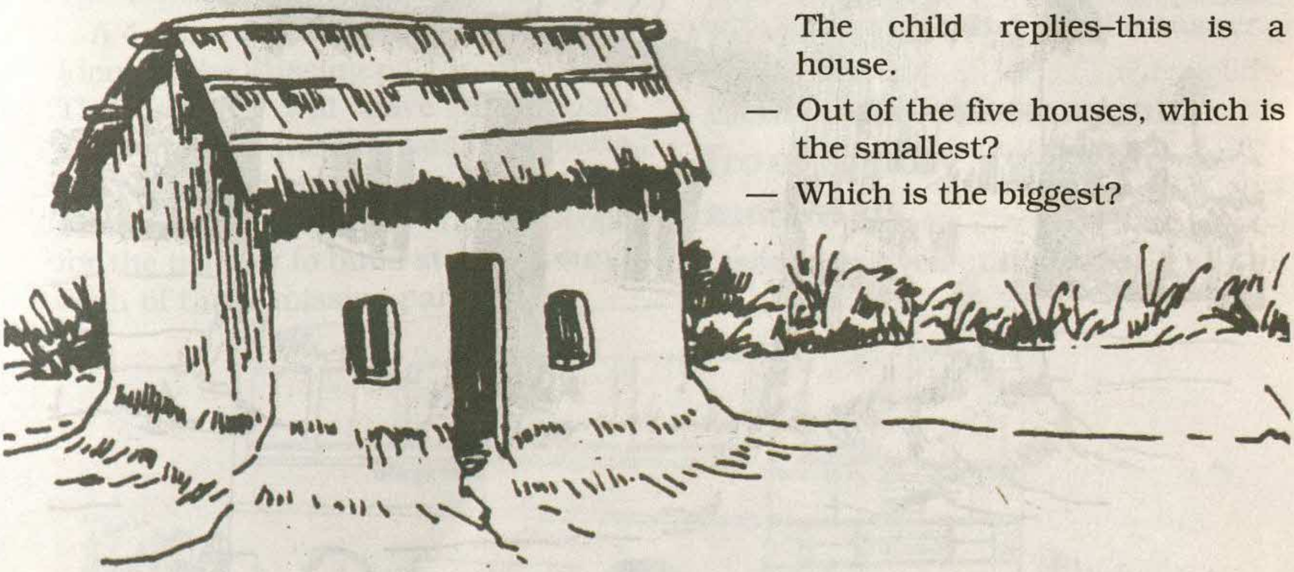


Fig. 19a

The child gives correct answers. Now s/he is asked to arrange them from smallest to biggest. The other two sets of cards are introduced in the same way.

For children with special needs

The teacher will prick the outline of the house with a needle. The visually challenged will be able to identify the smallest and the biggest by feeling the edges. Children may also be given sticks of 5 different lengths to play with and find out the smallest and longest ones.

Hints on construction from locally available materials

The teacher may prepare sets of cards with drawings, prepare multiple sets by photocopying.

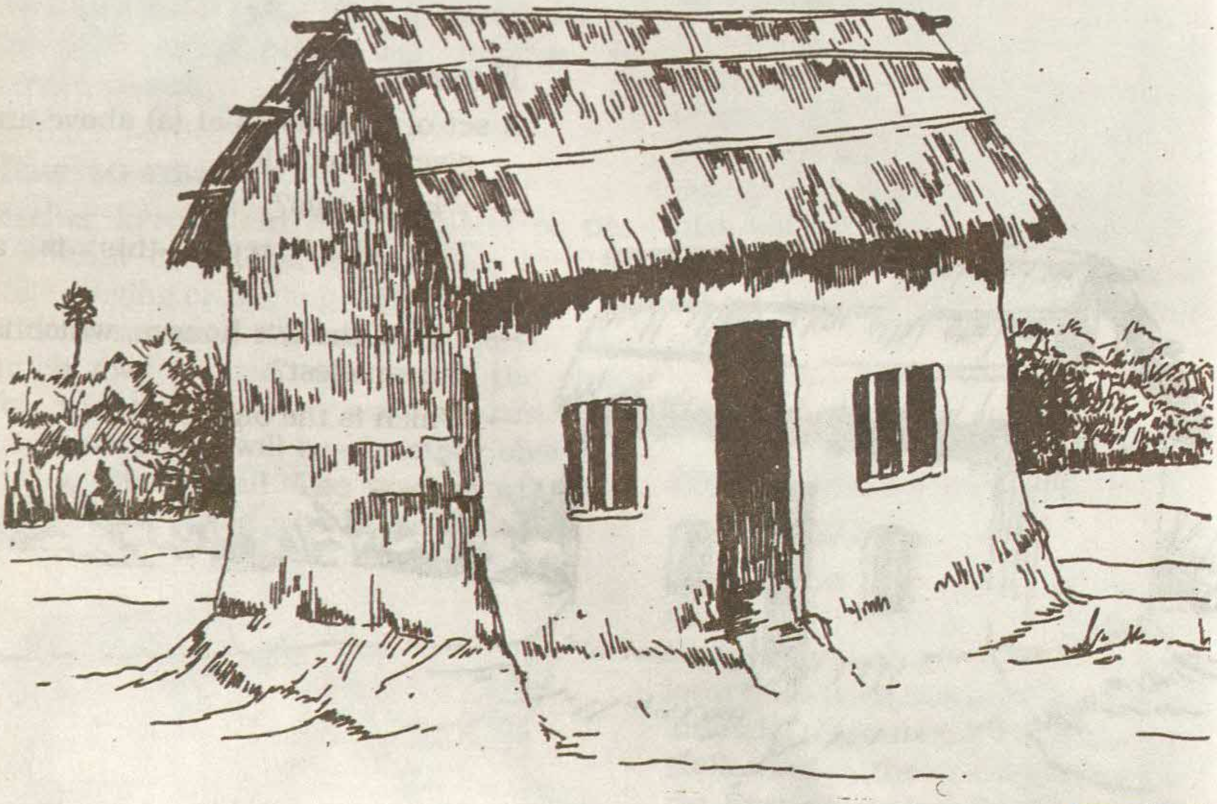


Fig. 19b

20. Observation Skill Cards ('what is missing?')

Specification

Six thick cards each 175×125 mm having pictures of

(a) a boy without one hand.
(b) a bus without one wheel.
(c) a girl without one ear ring.
(d) a cat without one leg.
(e) a tea pot without the handle.
(f) a bicycle without one pedal.

How to use

The teacher shows the picture and asks the child — what is missing in this picture?

A 4-year-old will be able to correctly identify the missing part in all cards. The teacher will have to prepare similar cards showing familiar objects in the immediate environment of the child. Besides, there is enough scope for the teacher to build stories around each of those missing parts.

OBJECTIVES

- Observation skill
- Language development

For children with special needs

The teacher will prick the outline of the object with a needle. Normal children with closed eyes as well as visually challenged children will feel the outline with fingers and find out the answer.

Hints on construction from locally available materials

same as given at item 19.

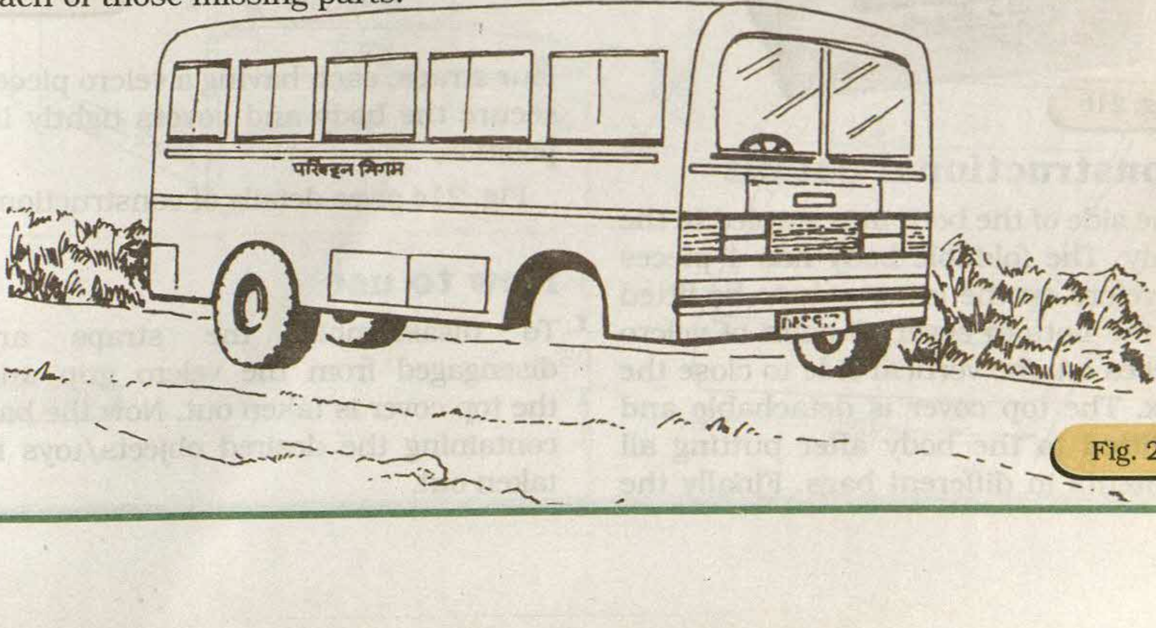


Fig. 20

21. Kit Box (to be used as flannel board, conversation calendar) with packing bags (with picture and names of contents printed on each) – 8 Nos

Specification

A. Body : made of corrugated plastic sheets, 2 mm thick, 1230 long × 600 mm wide with other details shown at Fig. 21a and, 21b.

The box measures 330×330×625 mm when assembled, packed and strapped.

Inside of the opened out box has flannel/felt lining while outer surface has 4 conversation calendars on 4 vertical surfaces and logo of NCERT on top cover.

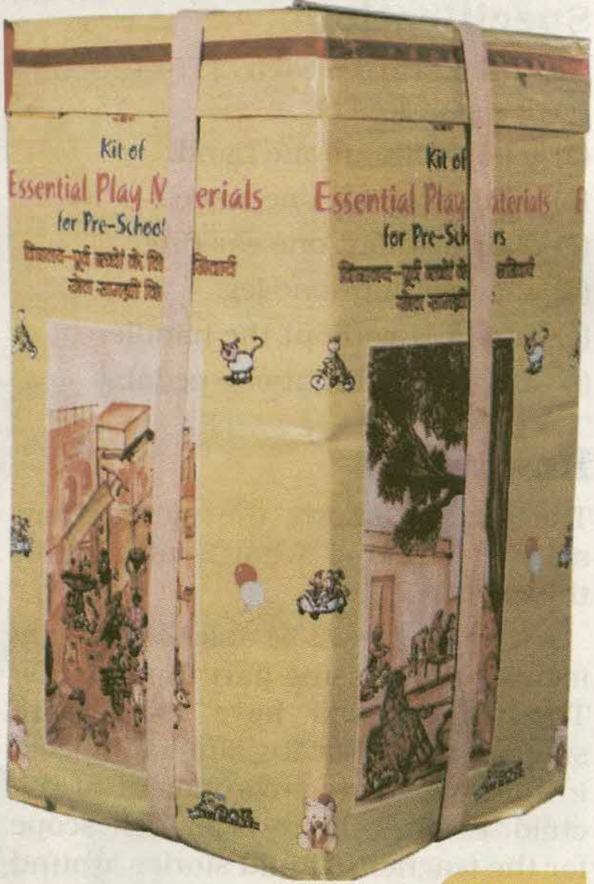


Fig. 21a

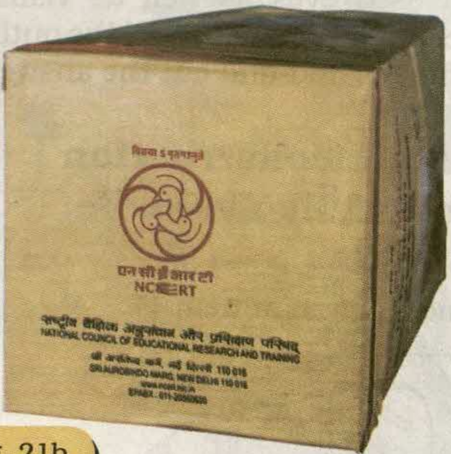


Fig. 21b

Constructional details

One side of the bottom is stapled to the body. The foldable body has 4 pieces of velcro on the lower side to be fitted to the bottom cover, 3 pairs of velcro pieces on one vertical side to close the box. The top cover is detachable and it fitted to the body after putting all contents in different bags. Finally the four straps, each having a velcro piece, secure the body and covers tightly in position.

Fig. 21c gives details of construction.

How to use

To disassemble, the straps are disengaged from the velcro grip and the top cover is taken out. Now the bag containing the desired objects/toys is taken out.

If the kit box is to be used as flannel/ felt board as shown at item No. 10, the box is opened out as at Fig. 21c. The opened out flannel/felt board can stand against the wall at any height or it can be hung on the wall. It may also be laid on the floor.

There are four pictures (conversation calendars), one on each vertical outer surface of the box. Children have to observe each picture and give a story connecting the persons, animals and objects in the picture.

For children with special needs

Disassembling the container box and assembling again is also a game which involve logical steps and motor skill. Fixing velcro straps at the right place is enjoyable.

Hints on construction from locally available materials

Discarded carton boxes of appropiate size could be used.

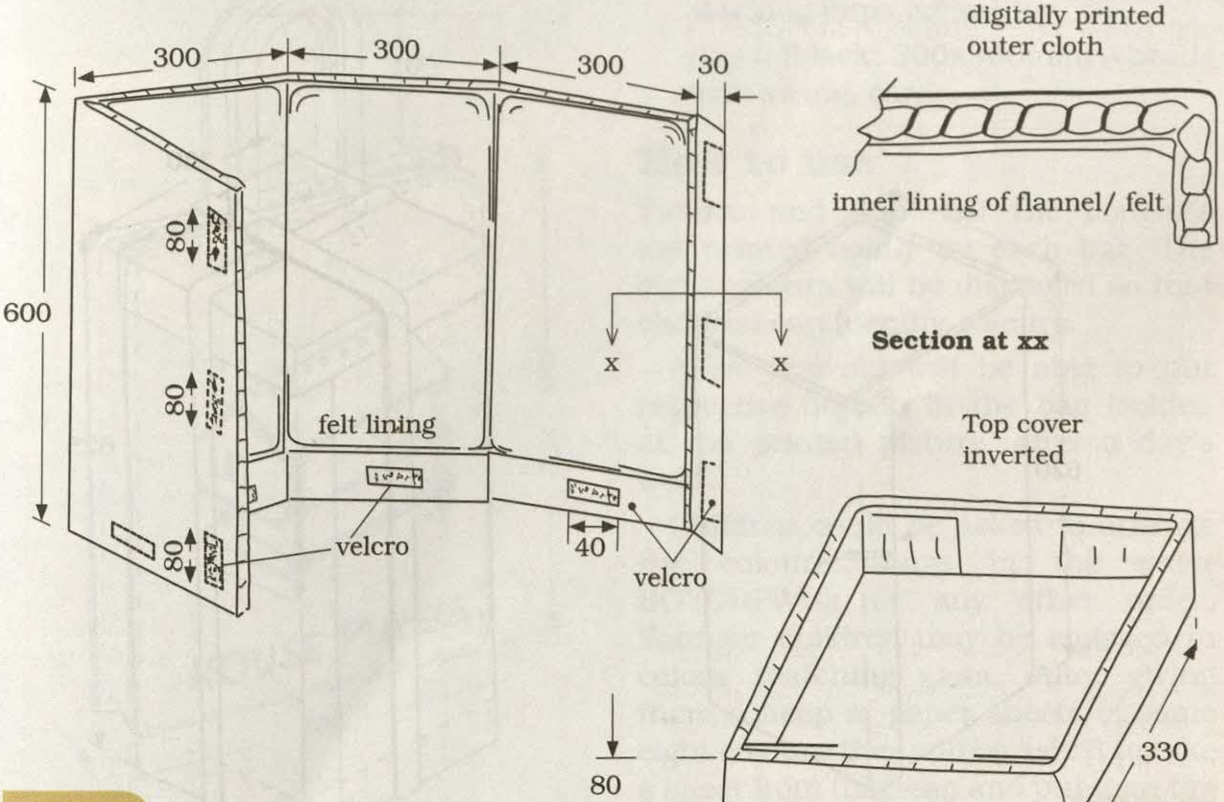
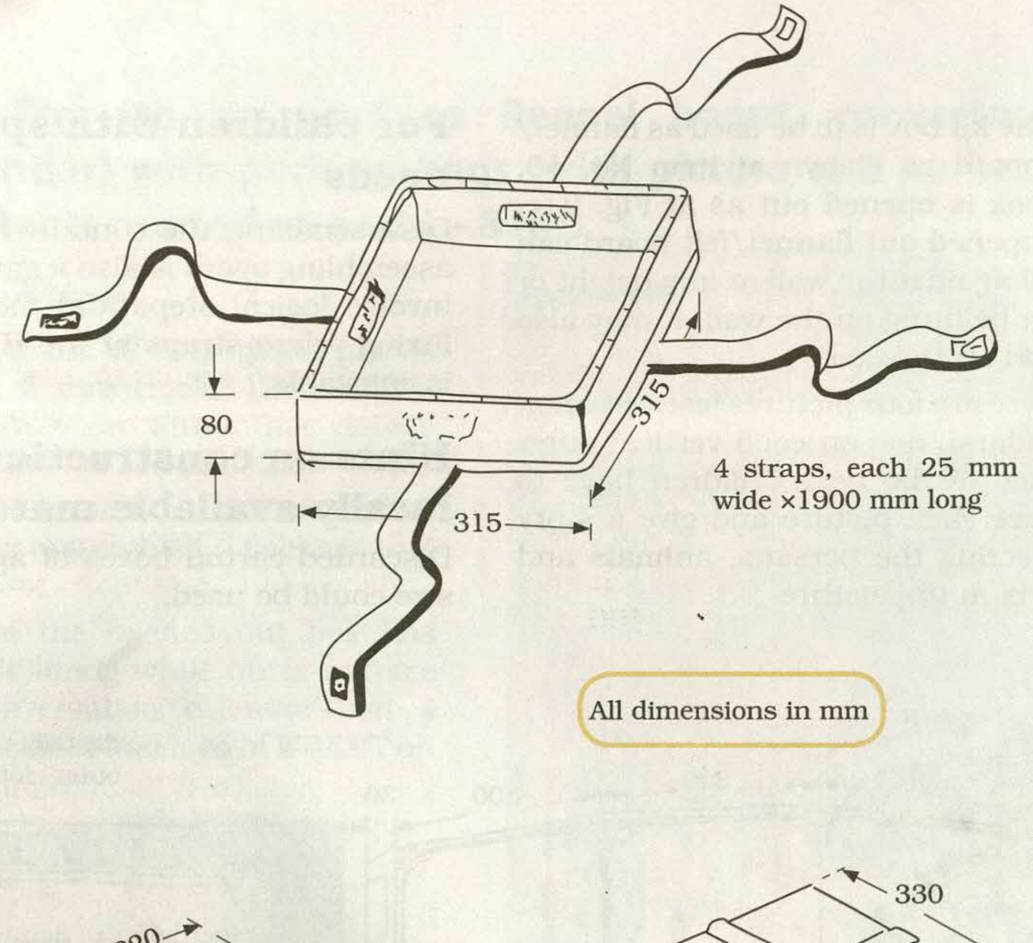


Fig. 21c



4 straps, each 25 mm wide ×1900 mm long

All dimensions in mm

Fig. 21d

Packing Bags

Specification

Each bag stitched from synthetic fine lining cloth, has zip and handles. The size and contents of each bag are given below –

- Packing bags (with picture and names of contents printed on each) – 8 Nos.
- Bag 1 (red, 300×400 mm) – house puzzle. Bag 2 (blue, 300×400mm) – blocks.

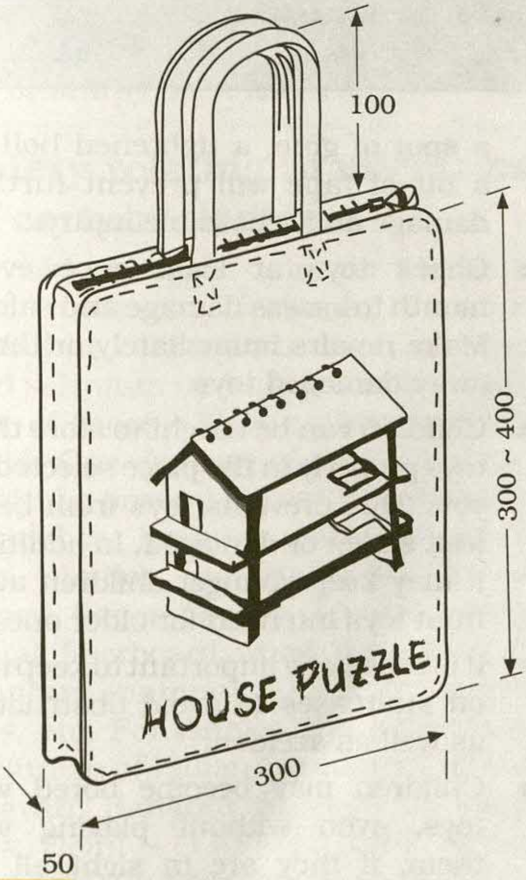


Fig. 22

Bag 3 (yellow, 300×300 mm) – shape seriation set with stands.

Bag 4 (green, 300×400 mm) – object puzzles, cut outs, masks.

Bag 5 (orange, 300×300mm) threading boards, velcro – cum – chalk board.

Bag 6 (pink 300×300mm) – puppets, dolls, flute, simple geometrical shapes.

Bag 7 (white, 300×400mm) – toy (bird) with magnet, ball with sound, stacking cups, wheel toy.

Bag 8 (black, 300×300mm) – beads with string, cards.

How to use

Picture and name of the contents are printed boldly on each bag. The eight colours will be displayed so that children can identify colours.

A-five-year-old will be able to put respective objects in the bag looking at the printed picture, after a day's work.

Children could be asked to arrange the coloured bags in the order BGYORPWBk or any other order. Younger children may be engaged in colour matching game. After giving them a heap of paper sheets of same eight colours they will be asked to take a sheet from the heap and put it on the bag having the same colour.

Safety Watch

Steps to safe play (for parents, teachers and caregivers)

- Consider the child's age, interests and abilities before buying toys.
- While buying, look for age ranges and safety warnings.
- Special care has to be taken while choosing toys for children under three, — toys that are free of small pieces (or pieces that separate or can be broken off), are lightweight and have no sharp edges or points and are non-toxic, are to be selected.
- Read instructions for assembly and use carefully.
- All packaging from a toy are to be removed before giving it to a baby or child.
- Consider a situation in which a child will play with a toy and children younger to him may also be there. A toy intended for an older child may be dangerous in the hands of a younger one.
- Watch children when they are at play and ensure safe play.
- Remind others including grandparents of safety aspects.
- Arrange a safe storage place for toys.
- The most well-made toys may suffer minor damage in play. Check toys regularly for cracks, tears, sharp edges, small parts, loose buttons, dirt, etc. Remind children to let you know when toys need repair. Often, a spot of glue, a tightened bolt or a bit of tape will prevent further damage and a possible injury.
- Check toys at least once every month to assess damage and safety. Make repairs immediately or throw away damaged toys.
- Children can be taught to store their toys properly in the place selected by you. This prevents toys from being lost, stolen or damaged. In addition, it may keep younger children away from toys intended for older ones.
- It is especially important to keep toys off staircases to avoid obstruction as well as accident.
- Children may become bored with toys, even without playing with them, if they are in sight all the time. So put the toys away and store them properly after the day's play.

- Never allow toys (to be played indoor) to remain outdoor overnight. Rain , dew, dust may cause damage that increases the risk of injuries.
  - A toy damaged beyond repair should be discarded in an inaccessible manner or replaced promptly.
- If a storage chest is used, be sure it has a removable lid or a support that allows the lid to remain in lifted position (without falling). The edges of the box should be smooth and without sharp edges.
- Another good option for storing and organising toys are large, stackable plastic bins, smooth-edged baskets, or sturdy open shelves.

Safety relating to migration of certain elements

An object might contain elements like antimony, arsenic, barium, cadmium, chromium, lead, mercury and selenium up to a certain level; any one of these will be injurious to the child. One or more of these elements might be present in coatings of paints, varnishes, lacquers, inks, polymeric and similar materials, laminates, paper, paper boards, textiles, glass, metal, fiberboard, wood, bone, leather, graphite materials, modeling clays, gels, etc. For details, the publication of Bureau of Indian Standards, Manak Bhavan, Bahadur Shah Zafar Marg, New Delhi - 110002, titled Indian Standard – Safety requirements of toys-IS 9873 (Part -3), 1999 and ISO 8124-3, 1997 may be consulted.

Safety related to mechanical and physical properties

Small toys and toys containing small parts are not suitable for children under 3 years.

Children under 8 years can choke or suffocate uninflated or broken balloons.

Aquatic toys should be used in shallow water and under supervision of adults.

Toys should generally have no parts, which have accessible sharp edges or sharp points. Such toys are not to be used by children up to 3 years in any case.

For crib gyms and similar toys it is to be ensured that the toy does not pose an entanglement or strangulation hazard for children.

For children up to 3 years no battery shall be accessible without use of a tool or unless at least two independent movements have been applied simultaneously to the battery compartment.

The toys should not be powered by electricity exceeding 24 volts.

The length of cords and elastics attached to the toys should not exceed 220 mm in length.

Open surfaces and edges of wooden toys should be free of splinters.

The details of safety requirements for toys related to mechanical and physical properties are given in the publication of Bureau of Indian Standards, Manak Bhavan, 9, Bahadur Shah Zafar Marg, New Delhi – 110002, titled Safety requirements of toys related to mechanical

and physical properties, IS 9873 (part 1); 2001 and ISO 8124-1 : 2000.

Safety related to flammability

Celluloid and similar materials having the behaviour of celluloid in fire shall not be used in the manufacture of toys.

The toys shall not have any flammable gases or liquid.

Beards, moustaches, wigs, masks and others worn by the child or the toy, disguise costumes, puppet theatre, toy tents, stuffed soft toys made from non-textile polymeric material present great fire hazards. These should be used only after standard tests prescribed by Bureau of Indian Standards, Safety requirements for toys; flammability requirements, Manak Bhavan, 9, Bahadur Shah Zafar Marg, New Delhi – 110 002, IS 9873 (part 2) 1999 and ISO 8124 – 2 1994.

Toys that should never be given to children under three years of age

- Toys requiring assembly of small and intricate parts together
- Toys requiring delicate finger movements or controlled adjustments
- Toys (in games or otherwise) requiring elements of reading ability beyond the ABCs or 123s
- Toys depicting or simulating adult figures or characters and their associated behaviour or mannerism
- Flying toys, projectile-type toys, launch vehicles, plane, etc.
- Make-up sets
- Toys having long cords, straps or wire

Toy making from locally available low cost materials

You may look for no-cost waste material and low-cost locally available materials. When you have toy ideas, a collection of such materials will be very helpful. A list of such material is given below:

Clay, wood, pebbles, seeds, bamboo, bark of trees, papers (all types: thin, thick, white, coloured, brown, news print, ivory, poster, etc.), rags, cloth, papier mache, cardboard, hardboard, plyboard, eva sheet, plastics (sheet, rod, pipe), cork, empty match box, ice cream cup, wool, button, thermocole, straw, cartons, cardboard box, cardboard pipe, empty spool, reel, bobbin, broom stick, coconut sheel, rubber bands, discarded greeting cards, paper bag, rope, thread, safety pin, metal wire, coconut fiber, resin, jutefiber, jute stick, pith, tin can, tin lid, plastic lid, bicycle tube and tyre, bicycle parts, shirt hanger, bottle cap, sheet metal, spring, metallic pipes of small diameter, plastic pipe, plastic bottle, sea shell, nut shell, shoe lace, sock, gloves, ceramic ring magnet, magnetic strip, mild steel sheet, small steel screw, chalkstick, balloon, sponge, etc.

You also require some basic tools to work with such as:

Sewing needles, pair of scissors, knife, brush, junior hacksaw, file, sand paper, emery paper, mini vice, old blade, nails.

For measurement you need —

30 cm ruler, tailor's tape, geometry box, vernier caliper (plastic body), etc.

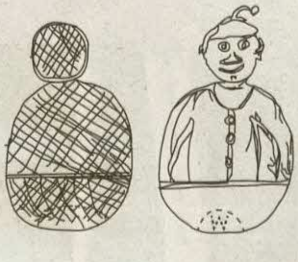
All such materials are to be collected, properly classified and stored with labels on shelves of an almirah by the side of a worktable.

You also need consumables like, glue, rubber solution, wax, sealing wax, cellotape, paint, brush, crayon, sketch pen, pencil, eraser, etc.

You can create hundreds of toys from locally available materials irrespective of where you are. Healthy development of the child requires a close interaction between the child and nature. Playing with clay, sand, stone pieces, plants, fruits, seedy leaves, water, etc., besides being cost-free, is very absorbing for the child. You may prepare many toys

out of these for the child. Examples are paper whistle, whistle from bamboo strip, leaf whistle, whistle from a pen cap, cracker from paper bag, paper clapper, clapper from banana leaf, drum from empty match box, seed rattle, balloon rattle, match box rattle, paper pipe rattle, pin wheel, cut-out figure, tube snake, finger puppet, teddy bear, puppy, bean bag, doll, rattle, pussy cat, view box, clown, rowing boat, dancing doll, colorful ball, paper bead, paper doll, mobile butterfly, dancing frog, bowl face, flying fish, rock and roll bird, fishing game, shape spinner game, laughing joker, marble game set, dancing clown, hanger mobiles, dress me doll, alphabet objects board, animal cart, animal, fruit bowl, wall decoration (clay toy), glove and finger puppet, mask (basic), face and head mask, paper and paper bag mask, trap the mouse (cardboard game), abacus, colour disc, musical toy, roly-poly clown, rowing boat, flying butterfly, etc.

Once you have collected the materials, you may try your hands in giving shape to your ideas. For self training, some exercises are given in the following pages with hints so that you may easily make them. There will be many problems: problem of understanding drawing, problem of finding right materials or tools, unsatisfactory outcome, etc. But these irritants should not stop you. You have alternatives to bypass the problems. If you use your own hands and have a determination to continue till the final shape emerges, nothing can stop you.



VII. TOY IDEAS

54 exercises with hints on construction (pages 51 to 79) are given here for the teacher to work on and enjoy giving shape to ideas.

Toy Ideas – I

General

Low cost play materials/toys particularly for children with special needs.

Eight exercises are given here with hints for fabrication.

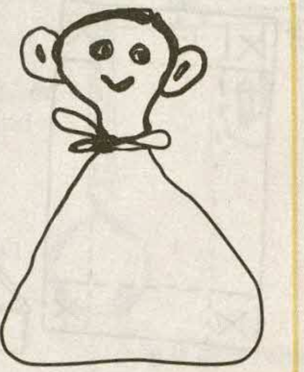
1. Bean bags

Stich a cloth bag as shown in Fig. 23

Fill up the cloth bag with synthetic wool or fibre cotton or any light stuffing material. Paint eyes, mouth, nose etc., stitch ears.

It becomes very handy for children with special needs as they will love to take on it lap, hug, pat, throw, etc. It helps in expressing emotions, development of coordination and motor skills.

Fig. 23



2. *Shape puzzles*

Take two thick sheets of cardboard or thermocole or EVA. Six shapes (Fig. 24) have to be properly dimensioned so that those are accommodated on the upper sheet on which the shapes are to be drawn and then punched out. The blanks at (a) will fit in holes at (b). The two sheets at (b) are to be joined with glue, one above the other.

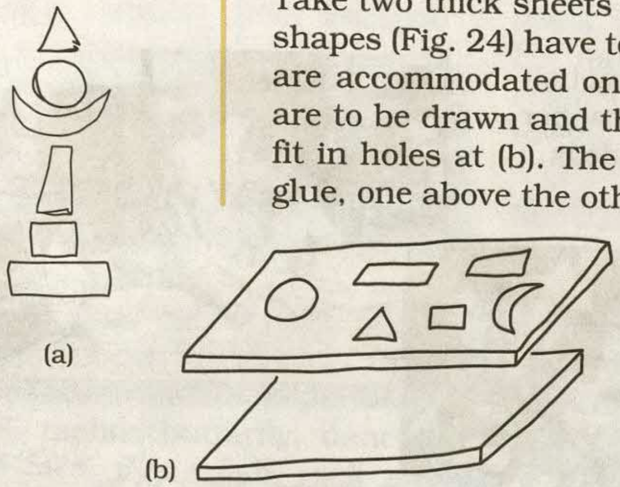


Fig. 24

3. *Threaded objects*

Ball pen bodies are generally 8-9 mm in diameter. If the cross section is octagonal it measures 6-8 mm across flat. If one M-8 or M-6 nut is rotated (with force) on the ball pen body as shown, the nut will cut thread along the length of its body. Now children can feel the thread on the body with fingers and nails. They will rotate the nut up and down while playing with it. Wrap cotton thread around the two ends so that the nut does not come out.

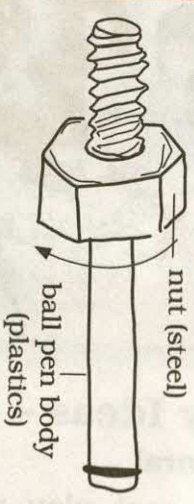


Fig. 25

4. *Nesting vessels*

For making boxes (top open) as at (b), cardboard paper or thick paper at (a) has to be taken and bent on the dotted lines after cutting off X portions. Joints can be secured by cello tape.

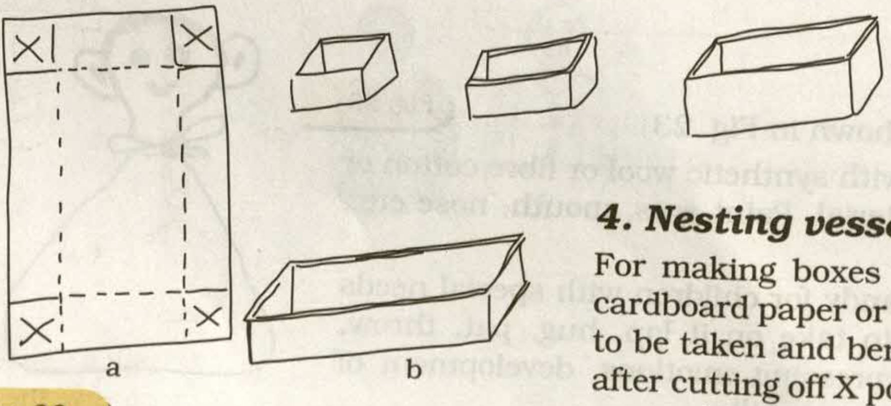


Fig. 26

5. *Rattle ball*

Take a rubber balloon. Insert a few small seeds like mustard seeds. Inflate it to about 70 mm diameter. Cover it with thin but strong brown paper strip with glue (three layers) allow the paper strips to dry. Cut hexagons from thin rubber or EVA sheet (which can be inscribed in 20 mm diameter circle). Fix the hexagons on the paper ball with rubber solution.

Fig. 27

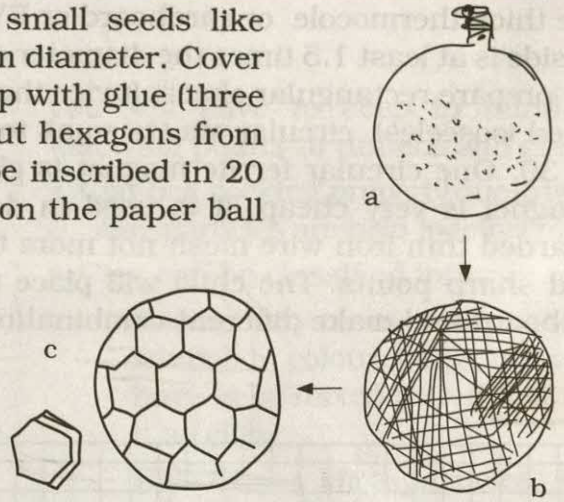
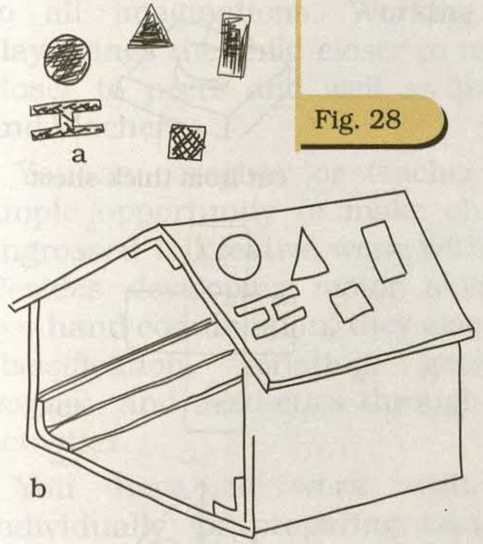


Fig. 28



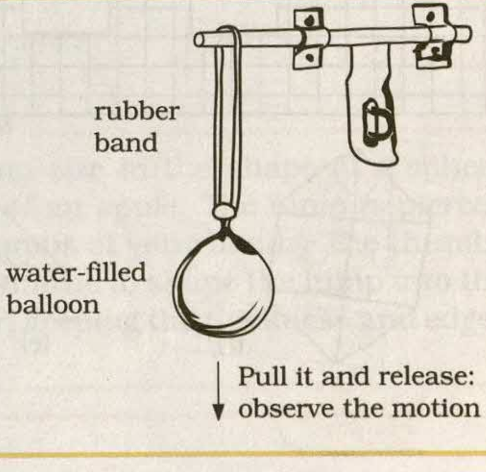
6. *Shape sorter*

One roof at (b) from hardboard or thick paper or cardboard or EVA has to be punched to have different shapes of slots. The blanks are shown at (a). Any of the 5 blanks will not pass through any slot except its own slot. The blank will be dropped through its corresponding slot.

7. *Water-filled Balloon*

Fill a balloon with water. Tie a strong and long rubber band to it. Suspend the rubber band from the door bolt. Now pull the balloon and release.

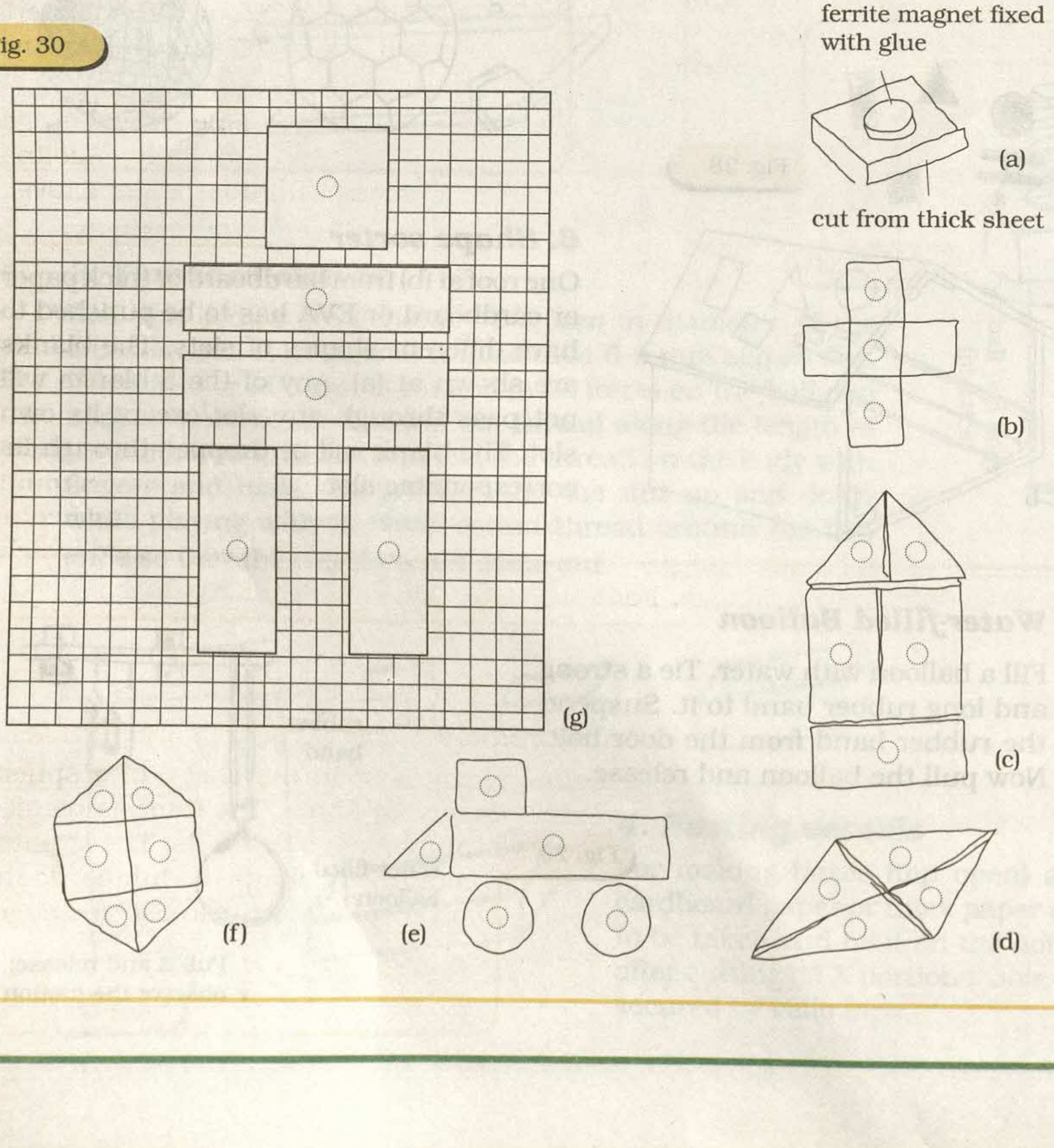
Fig. 29


rubber band
water-filled balloon
Pull it and release: observe the motion

8. *Geometrical shapes (Magnetic)*

Take thick thermocole or cardboard or EVA sheet. Cut a square piece 'a' whose one side is at least 1.5 times the diameter of the ferrite magnet (20 mm diameter). Now prepare rectangular sheets (twice the length of 'a'), triangular sheets (right-angled isosceles), circular sheets so as to make combinations as at (b) to (g) in Fig. 30. One circular ferrite magnet is glued to each geometrical figure. Such a magnet is very cheap. It is used in domestic gadgets like speaker. Take a discarded thin iron wire mesh not more that 300 × 300 mm. Fold the edges to avoid sharp points. The child will place the geometrical shapes (magnetic) on this board and make different combinations.

Fig. 30



Toy Ideas – II

Working with clay

Clay is available everywhere and so this is the cheapest but most effective medium for child development. Every child is curious and creative. Clay offers the child the opportunity to play with it endlessly, to do all experiments with its properties like water holding capacity, plasticity, etc. and give shape to all imaginations. Working with clay brings the child closer to nature, closer to peers and well as parents and teacher.

You as caregiver or teacher have ample opportunity to make children engrossed in creative work with clay. Besides developing motor skill and eye-hand coordination, they also learn classification, seriating, geometry, texture, and aesthetics through such activities.

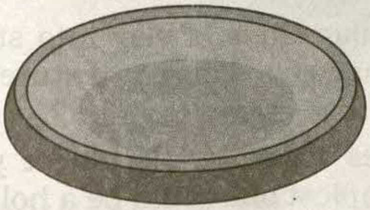
You have to work with clay individually for preparing toys, and collectively with children for providing them facilities and guidance. For this you will have to keep in mind the following points to understand clay.

- Clay has 'flocking' property due to which clay particles are held together.
- Clay can be classified into:
  - Kaolin : very coarse, low plasticity, whitish in colour. Other materials have to be mixed with it for using it as clay.
  - Ball Clay : Fine particles, good plasticity. Generally Kaolin is mixed with it for making toys.
  - Fire Clay : High plasticity.

Clay Preparation–Clay mass moistened with water is kneaded with fingers till all particles are broken up and a lump of uniform property (adhesiveness, plasticity) is obtained.

- There are three major methods of forming objects from clay manually. Professionals use potter's wheel and other mechanised method which is not described here.

Fig. 31



Pinch method

Maximum lump size in the shape of a sphere could be that of an apple. The lump is pierced by the two thumbs of your hands. The thumbs and fingers continue to shape the lump into the form of a *katori* keeping the thickness and edges uniform.

Coil method

(a) A lump of clay is flattened and put on floor. Make a shallow groove at the centre.

(b) Mix another lump of clay with water so that it is semi solid and does not flow like water. Fill up the shallow groove uniformity with this batter.

(c) A few more lumps of clay are taken. These are moistened with water. Make long sticks of moistened clay by rolling lumps on floor.

Now coil the stick over the batter. While coiling make the inner and outer walls smooth by applying batter with finger.

You will get a final shape as at (g). If you want to add a handle, you may paste a coil of desired shape. If you want to emboss your name on the body, you can do it now before the vessel dries up.

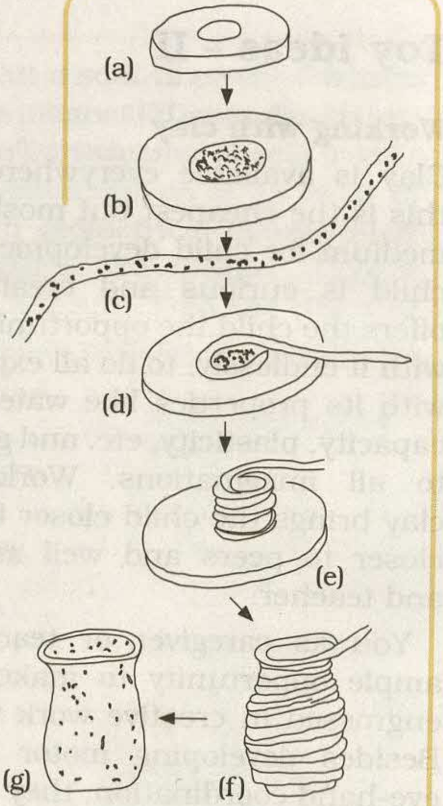


Fig. 32

Patting method

(a) Press a lump of clay between your palms and the floor so that the thickness is more or less uniform.

Roll this flattered lump between two sticks by a roller so that the clay mass gets desired thickness uniformly.

(b) Now cut the rectangular sheet of clay into sizes of your choice. You may give different texture on each tablet. You may also engrave.

(c) Now join these pieces to build the object you have in mind. The simplest one could be a hollow vessel as shown at (c). You are to apply batter on each joint and make inside and outside of the vessel smooth.

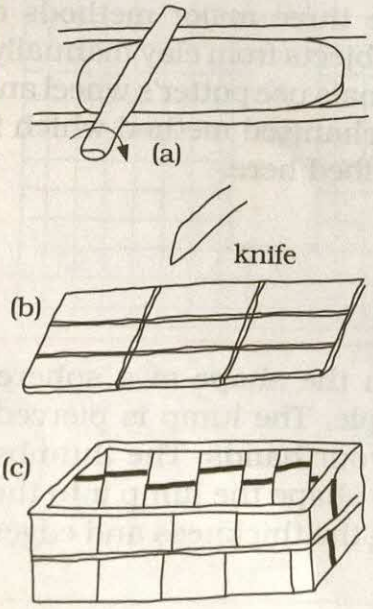
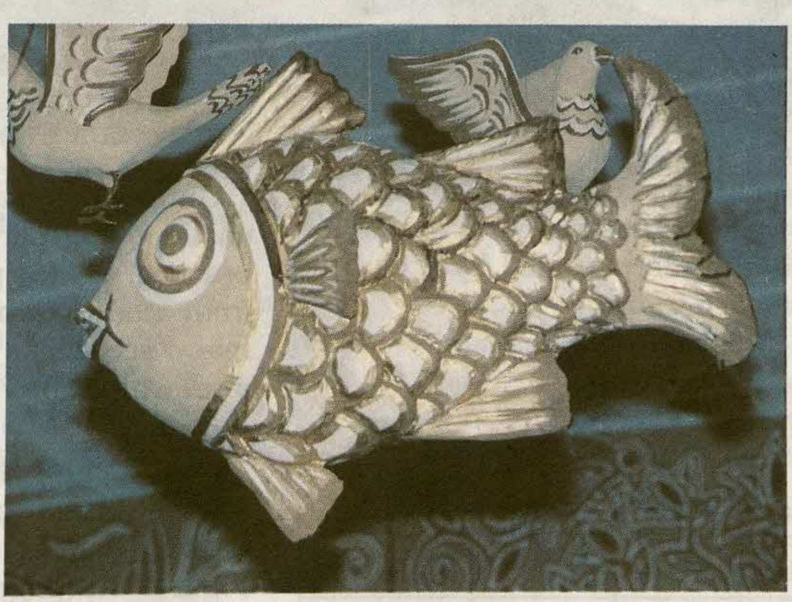


Fig. 33

Once you have practised these three methods, you will be able to prepare any shape by judiciously combining these methods in construction.

Finishing clay models/toys

- Sun drying: The clay model in soft and moist condition should be placed on a piece of wood to dry in the sun. The object should not be kept in one position while drying in the sun; it should be turned around for uniform drying. Thin section will dry fast; so the object should be covered with a moist cloth.
- Baking in kilns: Sun dried pieces are fired in Kilns up to 600 °C to produce what is termed as 'terracotta'. When this firing is done in presence of oxygen, the object turns red. When it is fired without oxygen, the objects turns black.
- Earthenware is made from coarse type of clay fired at low temperature, whereas porcelein is made from purest form of clay fired at high temperature.
- After sun drying or backing you may apply colours on the object with the help of brush.



Working with papier mache

Paper pulp is produced by soaking old newspapers, waste paper strips in water for 24 hours. The lump is pounded by a club to get uniform mass.

	Use	Paper pulp	Chalk powder	Gum
A.	For filling	1 kg	8 kg	—
B.	For casting	1 kg	3 kg	250 gram
C.	For joining	1 kg	—	500 gram

Mixture of chalk powder, paper pulp and gum is ideal for casting in moulds. *Multani mitti* (clay) particles are very fine and so it is used sometimes in place of chalk powder.

Gum binds paper pulp with chalk powder particles. Common practice is to prepare starch from rice or wheat. There are many seeds like tamarind seed from which good quality paste is prepared.

Ball, rocking doll or any such toy could be prepared using papier mache as shown at Figures on (pages 63, 67). This is called layer method in which small pieces of coloured paper moistened with water uniformly cover the mould. If you are making a mask, cover the surface of the master pattern by moistened small pieces of coloured paper. This is the first layer.

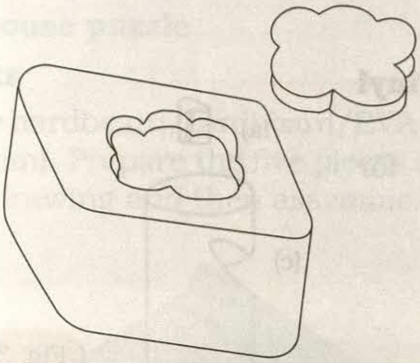
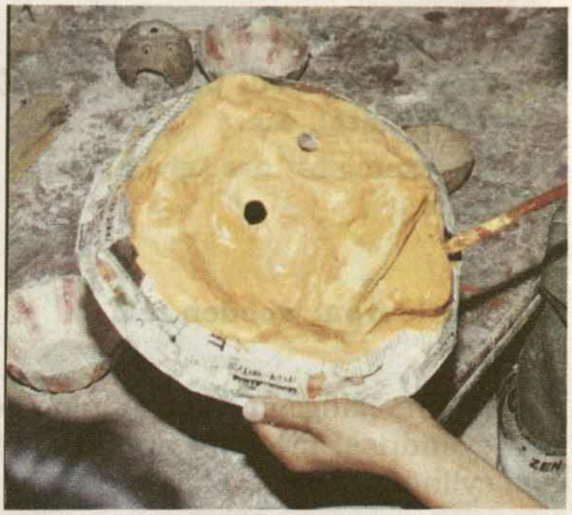


Fig. 34



The second layer will have to be given in such a manner that pieces in the first layer are held together. Third layer will again have small pieces of paper, but of different colour so that you can examine thickness and bonding of each layer with gum. You may go upto 30 layers for a strong product. Then chalk powder with adhesive is pasted on this uniformly. Dry it in the sun.

The totally dried mask is now ready for painting.

If you want to make dozens of the disk shown in Fig. 34 you make a plaster of Paris mould. In a metallic or plastic or a strong corrugated board container, plaster of Paris powder is poured. To this, water is mixed to produce a soft mass on which the mould is cut with metal knife or tools. If you have the ready made sample (like coin, leaves of a tree, etc.) you may straight away dig the sample into the soft mass of plaster of Paris, get the impression, remove the sample and allow the mass to dry. After drying up the plaster of paris becomes very hard. Now you may force a lump of moistened papier mache; then carefully take out the object from the mould. This is the moulding method for producing papier mache objects.

Toy Ideas–III

Working with wood, plastic, EVA (Ethylene Vinyl Acetate), metal, etc.

Eleven exercises are given here with hints for fabrication

1. Whistle from wooden reel

Hints:

Cut off one flange of the reel, plug bottom hole with one cylindrical piece (b) and top hole with another half cylindrical piece. Cut a notch as at (c).

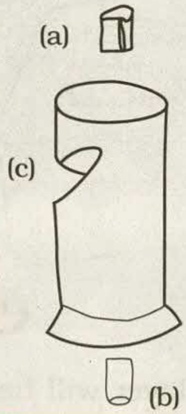


Fig. 35

2. Puppeteer's whistle

Hints:

Ends of two very thin bamboo strips (flat) are tied with thread in such a manner that a gap as shown in Fig. 36 is formed. Now a stretched rubber band is fitted as shown. One has to hold it between the lips and blow air from mouth. A peculiar whistling sound is produced.

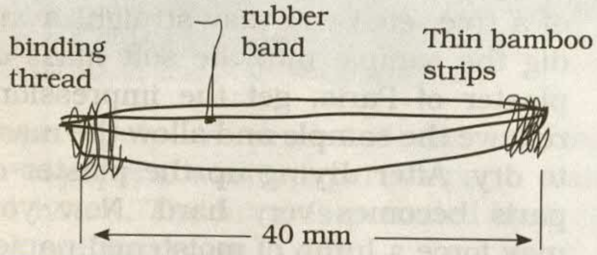


Fig. 36

3. Stamps

You can produce stamps from potato or cork or stem thorn of *seemul* tree

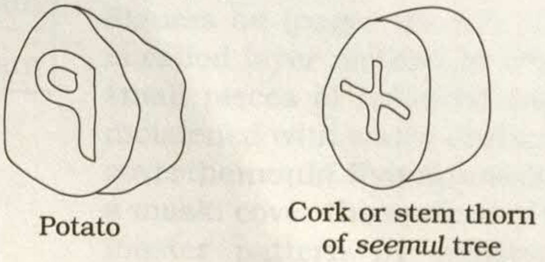

Potato
Cork or stem thorn of *seemul* tree

Fig. 37

4. House puzzle

Hints

Take hardboard/cardboard/EVA sheet (6 mm). Prepare the five pieces as per the drawing and then assemble.

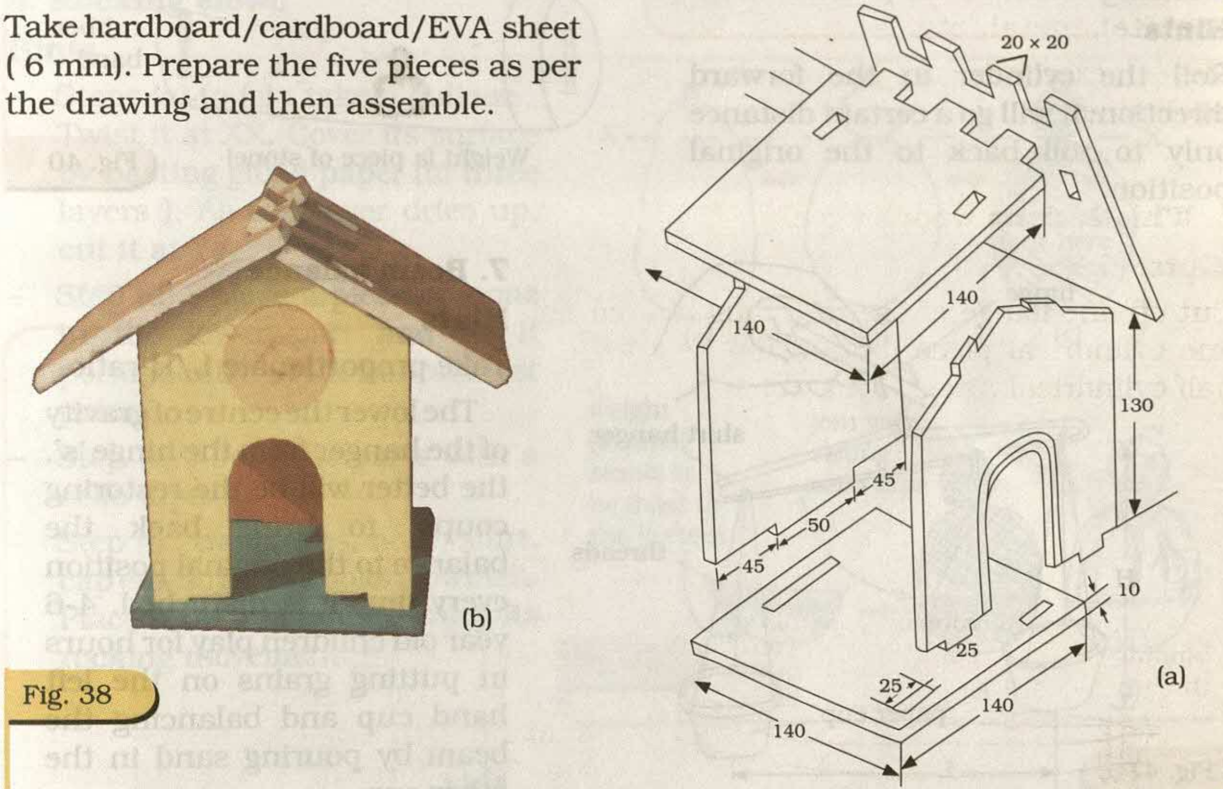


Fig. 38

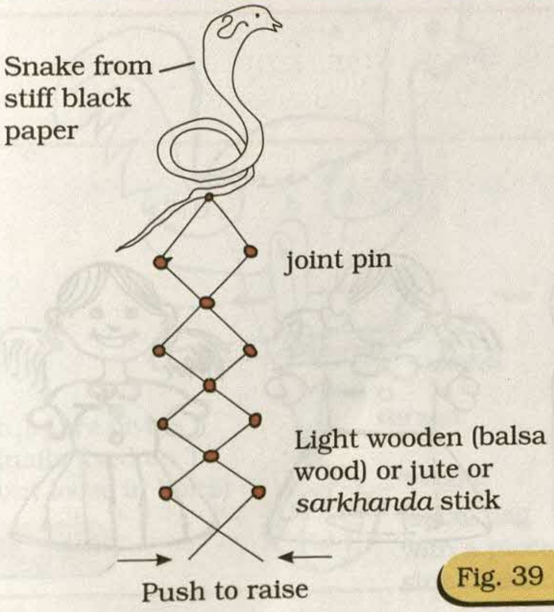

Snake from stiff black paper
joint pin
Light wooden (balsa wood) or jute or *sarkhanda* stick
Push to raise

Fig. 39

5. Moving Snake

Hints

Take light wooden or dried jute or *sarkhanda* sticks. Make a collapsible frame as shown in Fig. 39. Make a cut-out of a cobra from thick black paper. Join the tail of the cobra to the tip of the frame.

6. Roll back cylinder

Hints

Roll the cylinder in the forward direction; it will go a certain distance only to roll back to the original position.

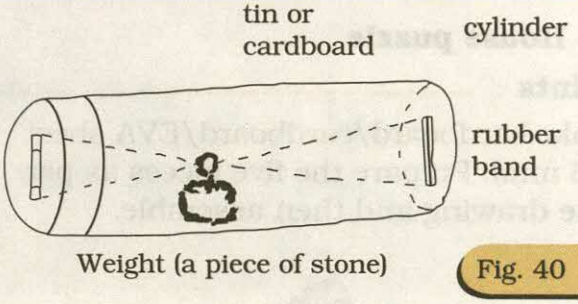


Fig. 40

7. Beam balance

Hints

Take proportionate L/H ratio.

The lower the centre of gravity of the hanger from the hinge 's', the better will be the restoring couple to bring back the balance to the original position every time it is disturbed. 4-6 year old children play for hours in putting grains on the left hand cup and balancing the beam by pouring sand in the other cup.

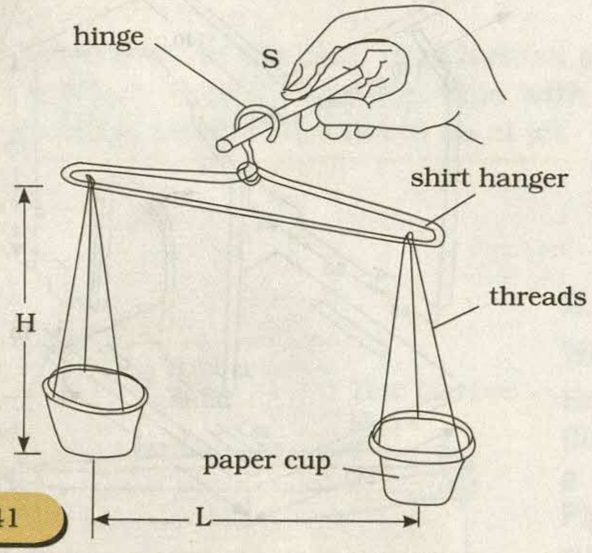


Fig. 41

8. Doll from glass/plastic bottle

Hints

The portion above the neck is made from crumpled paper surfaced by glued paper/papier mache/clay. Proper dressing up and painting will bring professional look.

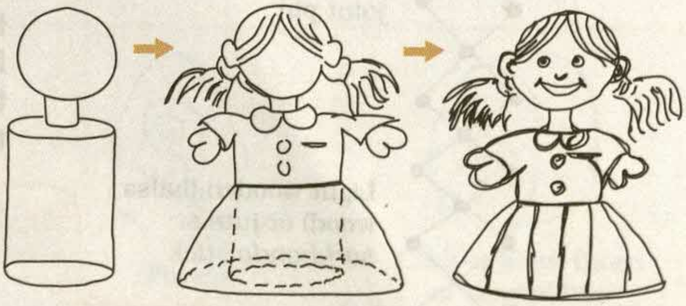


Fig. 42

9. Rocking clown

Hints

- Steps (a) to (c) : take a balloon . Twist it at XX. Cover its surface by pasting glued paper (in three layers). As the cover dries up, cut it at YY.
- Step (d) : place a piece of stone in the lower part and fix it permanently at the bottommost point.
- Step (e) : Join the parts with a cello tape.
- Step (f) : paint eyes, nose, shirt, cap etc. so that it looks clownish. Place it on a table and enjoy its rocking movement.

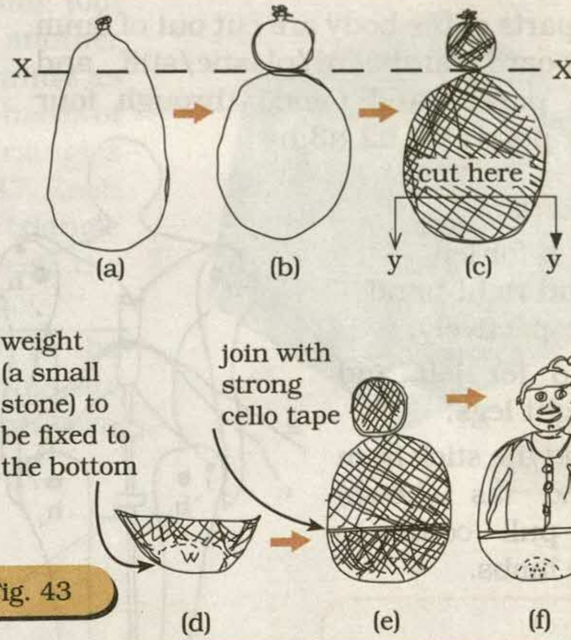

X
X
cut here
y
y
(a)
(b)
(c)
weight (a small stone) to be fixed to the bottom
join with strong cello tape
W
(d)
(e)
(f)

Fig. 43

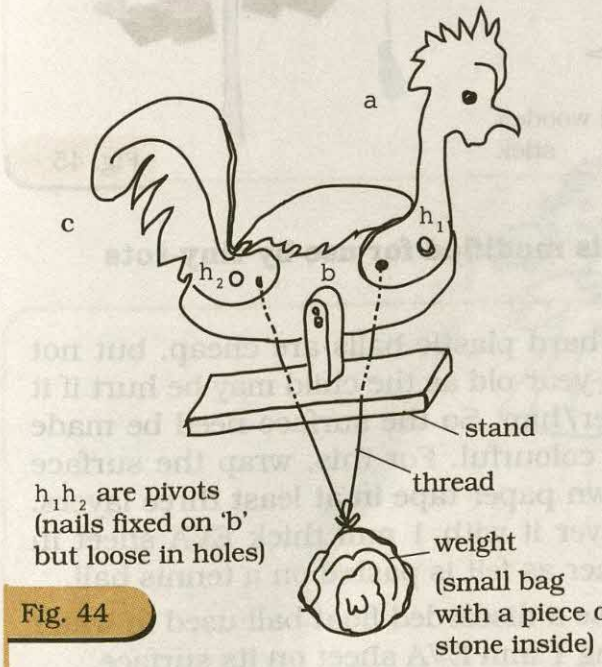

a
c
h_1
h_2
b
stand
thread
h_1h_2 are pivots (nails fixed on 'b' but loose in holes)
weight (small bag with a piece of stone inside)
ω

Fig. 44

10. Dancing bird

Hints:

Cut out parts (a), (b), (c) from 2 mm hardboard/cardboard sheet. Fix 'b' on a wooden stand shown. As the weight swings, head (part a) and tail (part c) move.

11. Human figure with moving limbs

Hints

Five parts of the body are cut out of 3mm hardboard/cardboard/plastic/stiff and thick papers and joined through four hinge points h1,h2,h3,h4 .

Fix cords:

- a, b for left and right hand respectively.
- c,d for left and right legs.

Hold the stick from behind (as shown) and pull cords to move limbs.

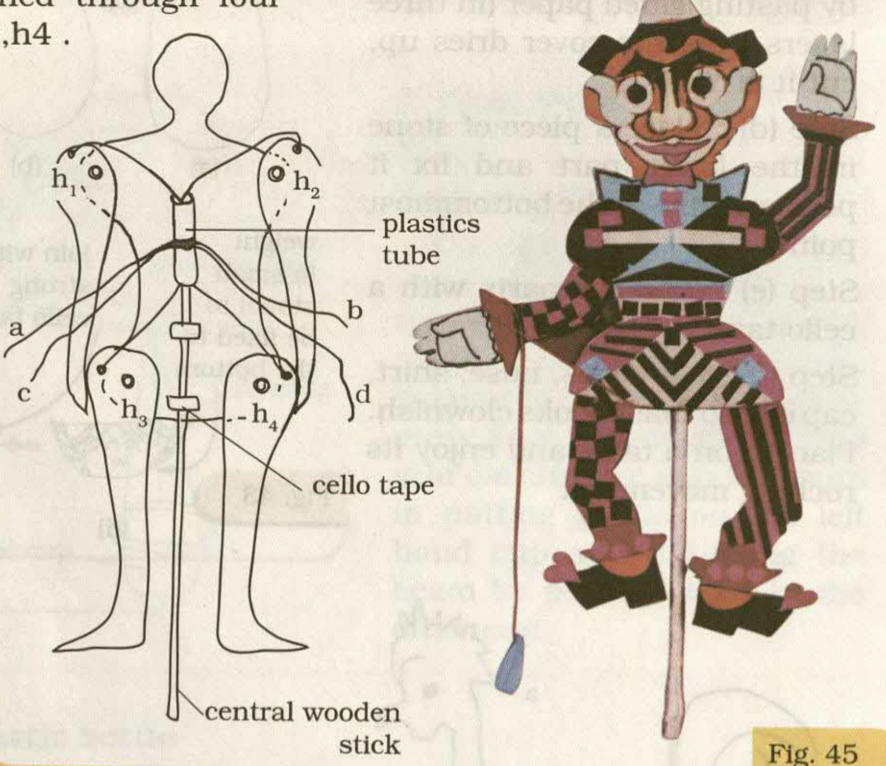
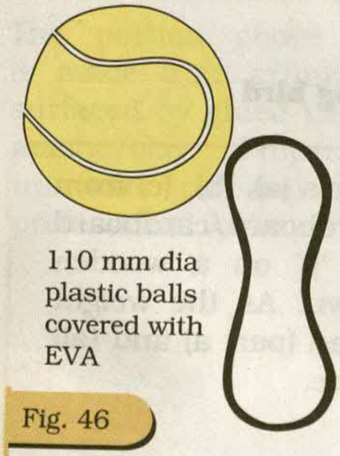


Fig. 45



110 mm dia plastic balls covered with EVA

Fig. 46

12. Plastic balls modified for use by tiny-tots

Hints

Blow-moulded hard plastic balls are cheap, but not suitable for a 3-year-old as the child may be hurt if it is thrown at her/him. So the surface need be made soft as well as colourful. For this, wrap the surface with glued brown paper tape in at least three layers. After drying cover it with 1 mm thick EVA sheet in the same manner as felt is pasted on a tennis ball.

You may reuse a discarded float ball used in water tanks by pasting 1 mm EVA sheet on its surface.

13. Ball from EVA sheet

Hints

Take 3 mm EVA sheet from which cut 20 equilateral triangles (each side = 90 mm); join 5 triangles to form a pyramid. Make another such pyramid. Keeping the bottom pyramid as the mirror image of the top one, join the bases of the two pyramids to a band of 10 such triangles joined side by side as shown in the Fig. 47. Each triangle is joined to its neighbouring triangle by pasting with rubber solution between the edges. There should not be any overlap.

Also see the photograph at page 79. In the finished ball, the distance between opposite peak is nearby 160 mm and that between opposite flat is nearly 140 mm.

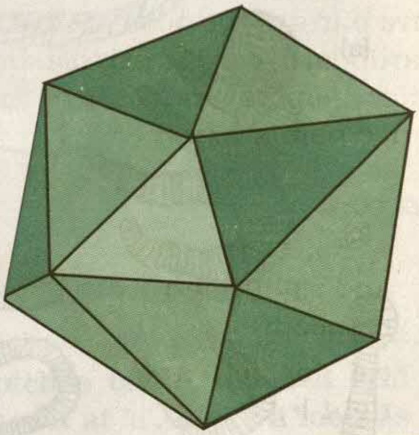


Fig. 47

Toy Ideas–IV

Paper craft

24 exercises are given here with hints for fabrication

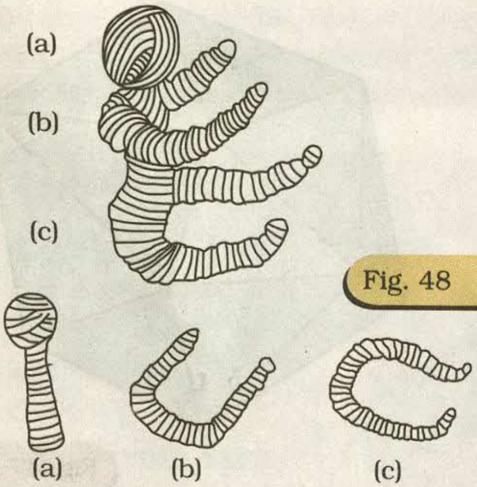


Fig. 48

1. Doll from used newspaper

Hints

Crumble used newspapers in the forms of a, b, c. Wrap threads tightly around them so that the forms are retained. Then join them as shown above with the help of threads. Dress up the structure and paint eyes, nose, hair, etc.

2. Doll from paper napkins

Hints

Take paper rolls and join them to get the shape of a man as shown.

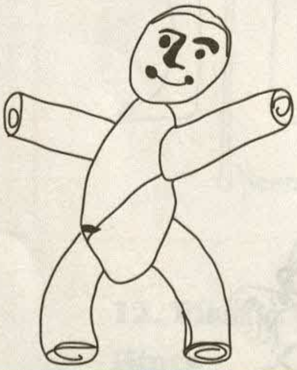


Fig. 49

3. Animal from used newspaper

Hints

Crumble used newspapers in the forms of a, b, c. Wrap threads tightly around them so that the forms are retained. Then join them as shown above with the help of threads. Dress up the structure and paint eyes, nose, hair, etc.

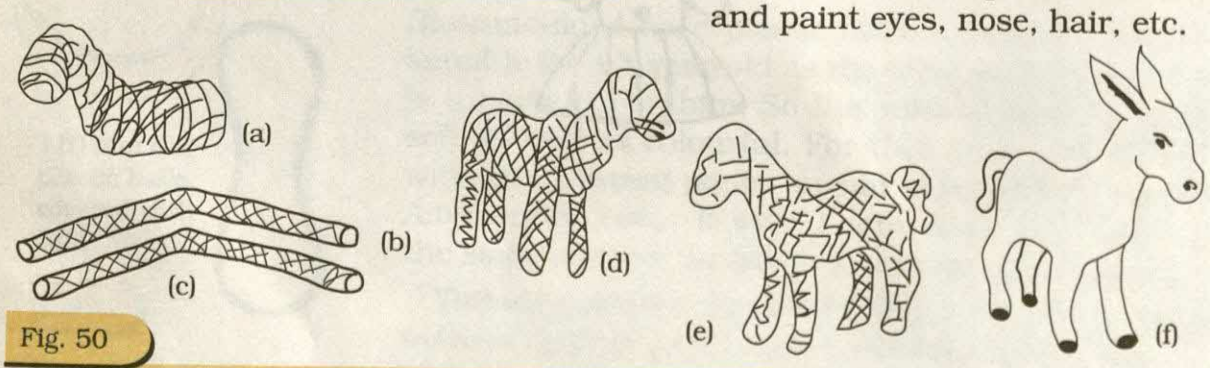


Fig. 50

4. Paper bowl

Hints

Soak used newspaper strips in water. Cover inner surface of a bowl (mould) with wet paper strips with glue. Allow it to dry and become stiff. Take out the dried layer from the mould with the help of a knife (with caution). Trim edges with a pair of scissors.

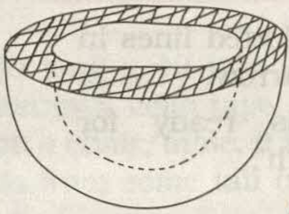


Fig. 51

5. Flying fish from thin paper

Hints

Cut two notches on a thin but stiff paper as shown at 'a'. Make a loop as at 'b'. Now throw it high as at 'c'. It will come down swirling.

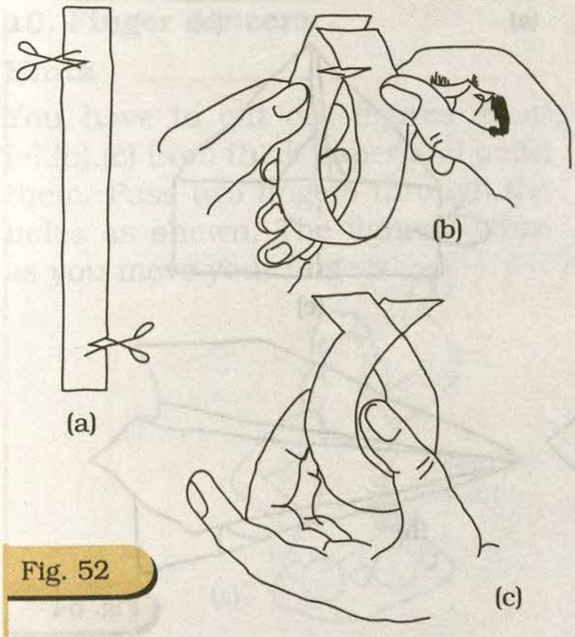


Fig. 52

6. Pop-up face

Hints

Take a paper sheet 130×175 mm. Fold and cut as shown at 'a', 'b', 'c', 'd'. Draw a face as at 'e', unfold it as at 'f'. A face will pop-up.

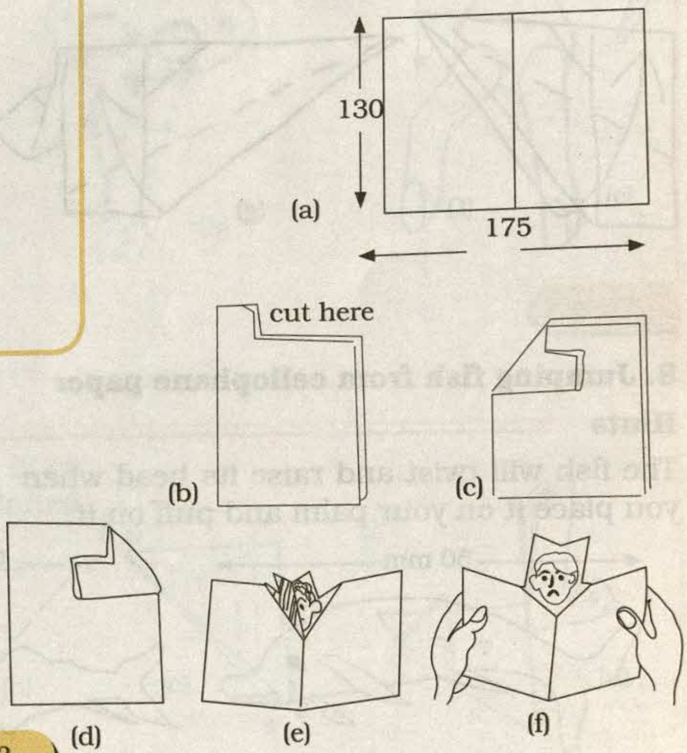


Fig. 53

7. Paper glider

Hints

Fold along the dotted lines in the direction of arrow.

The glides is ready for launching as at 'h'.

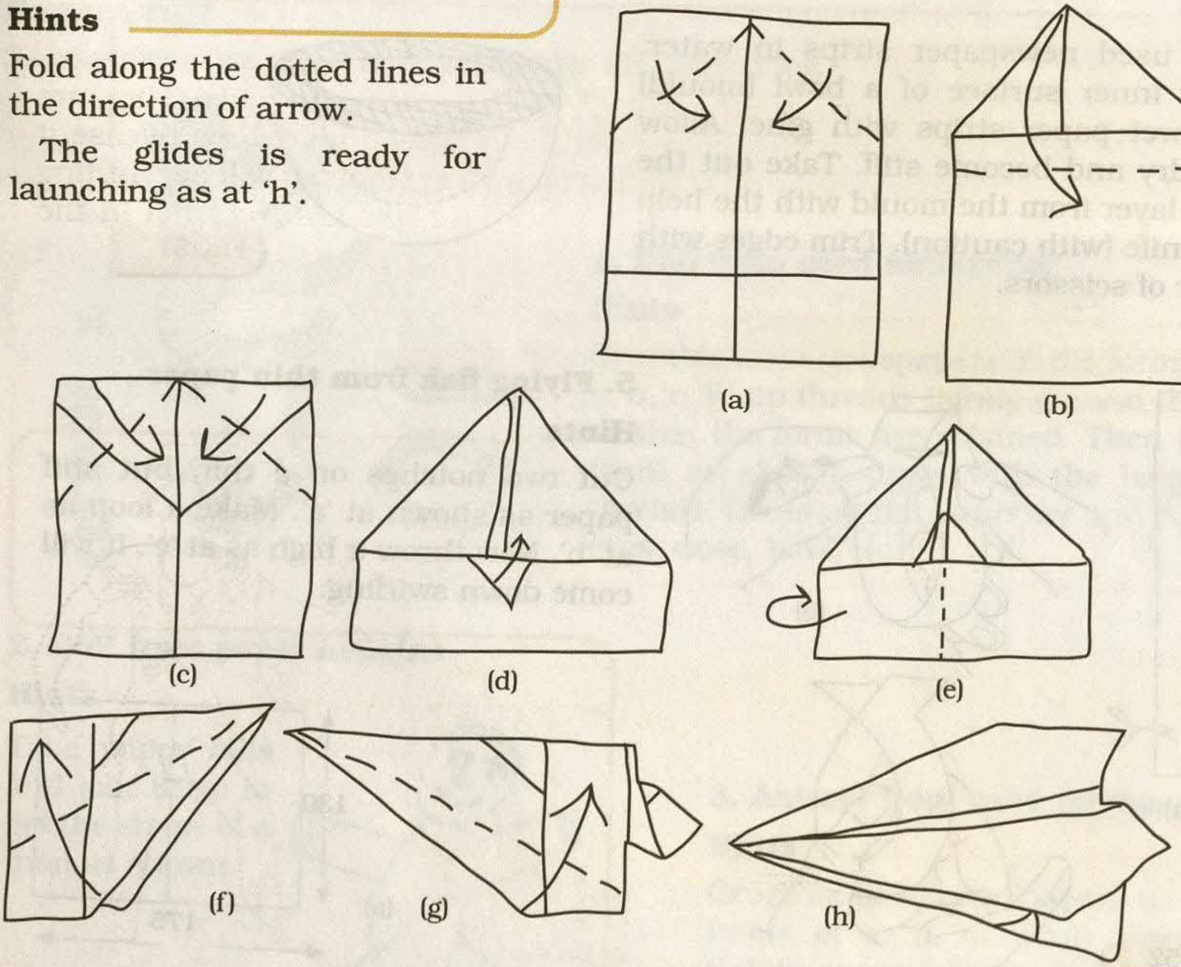


Fig. 54

8. Jumping fish from cellophane paper

Hints

The fish will twist and raise its head when you place it on your palm and puff on it.

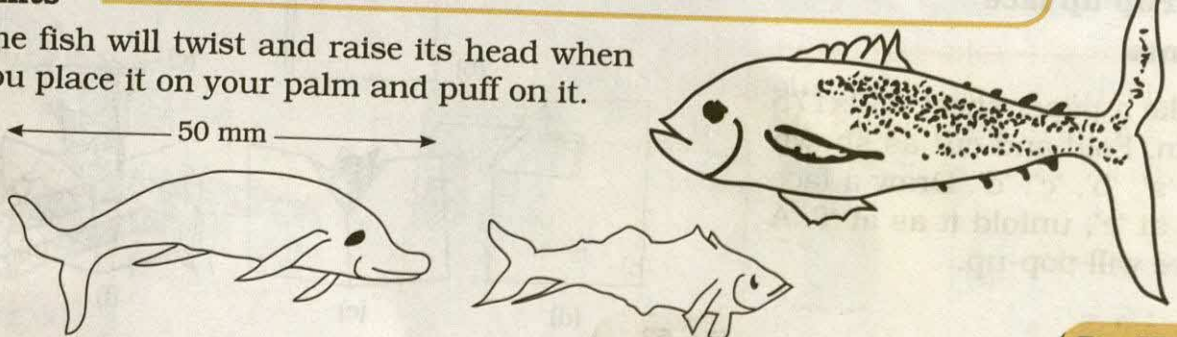


Fig. 55

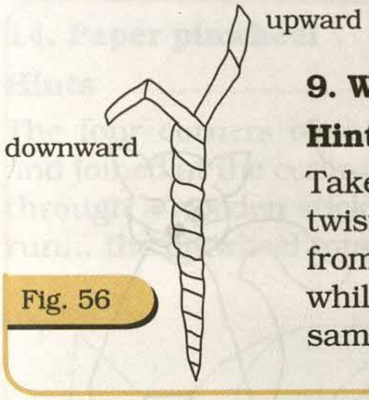


Fig. 56

9. Whirling wings

Hints

Take two paper strips 150 long × 12 mm wide. They are twisted and held in position by a cello tape. Now release it from your hand standing on a chair/table, it will be whirling while falling. Winged seeds from some tall trees fall in the same manner.

10. Finger dancers

Hints

You have to cut out figures as at (a),(b),(c) from thick paper and paint them. Pass two fingers through the holes as shown. The figures dance as you move your fingers.

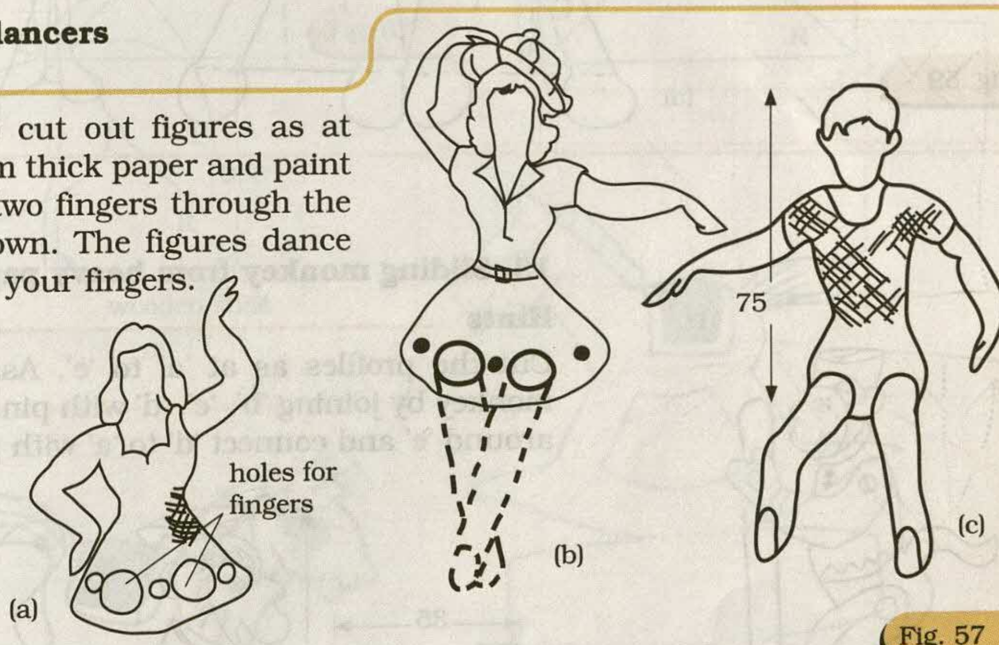


Fig. 57

11. Flying bird

Hints

You have to fold along the dotted lines marked on the paper. Cut along the dotted lines at 'c' to get the bird at 'd'.

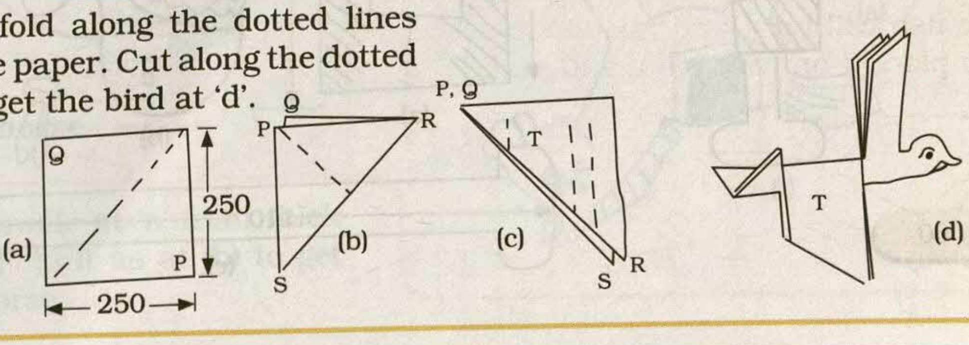


Fig. 58

12. Cat from heavy paper

Hints

Cut the profile at 'a' from a heavy paper sheet. Fold along the dotted lines to get the cat as at 'b'.

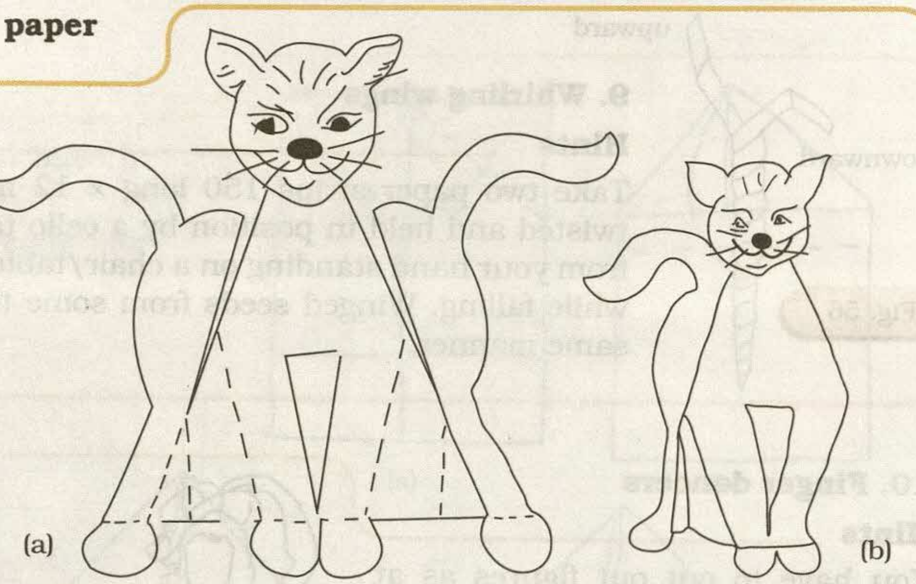
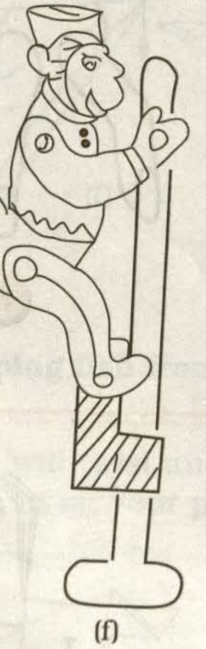


Fig. 59

13. Sliding monkey from heavy paper

Hints

Cut the profiles as at 'a' to 'e'. Assemble the monkey by joining 'b', 'c', 'd' with pins p. Fold 'a' around 'e' and connect 'd' to 'a' with pin p.



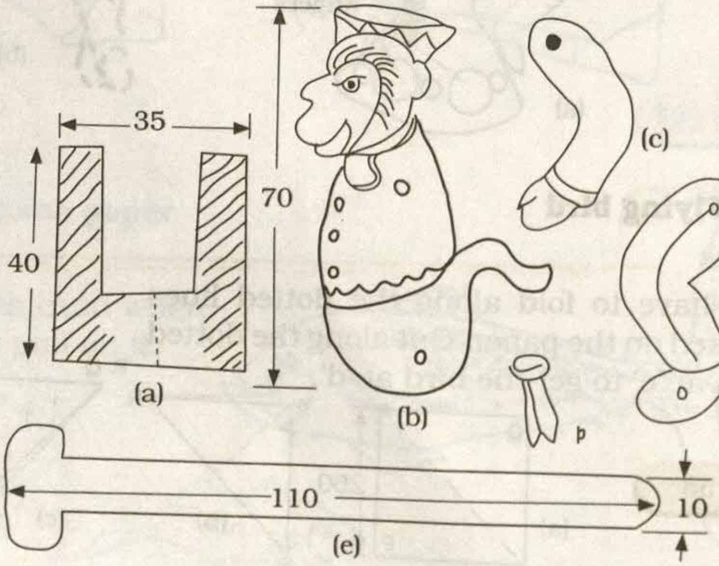


Fig. 60

14. Paper pinwheel

Hints

The four corners of the paper are twisted and joined at the centre by a pin which goes through a wooden stick. Hold the stick and run... the pinwheel rotates.

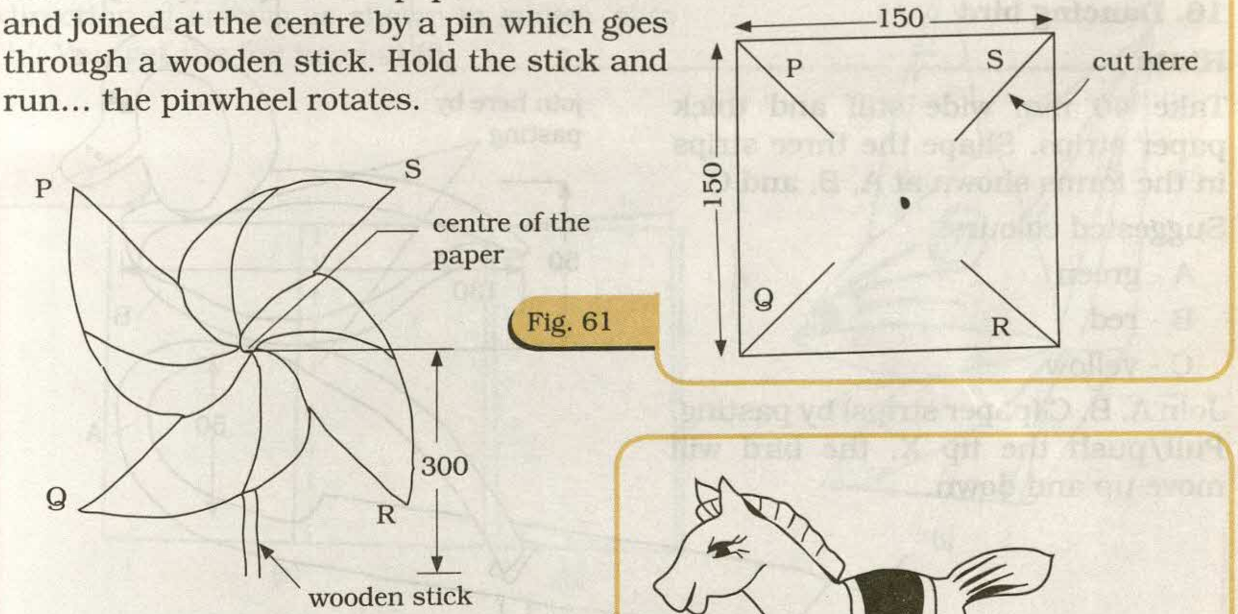


Fig. 61

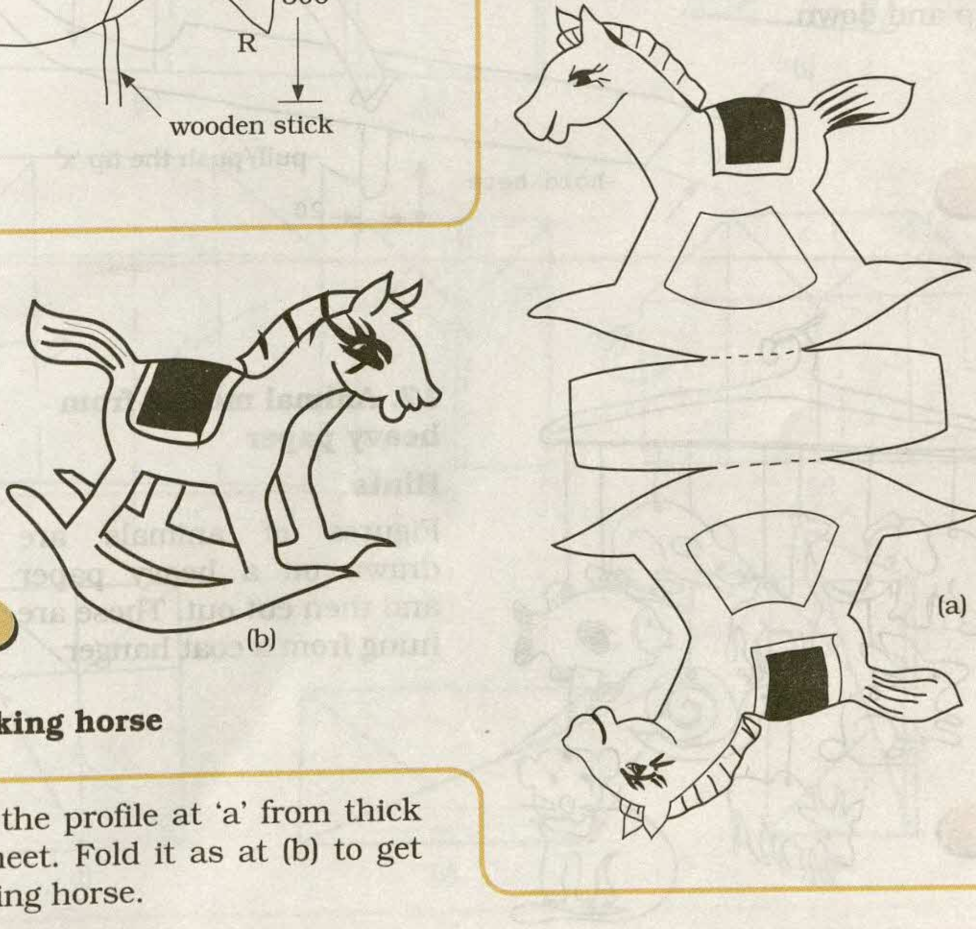


Fig. 62

15. Rocking horse

Hints

Cut-out the profile at 'a' from thick paper sheet. Fold it as at (b) to get the rocking horse.

16. Dancing bird

Hints

Take 40 mm wide stiff and thick paper strips. Shape the three strips in the forms shown at A, B, and C.

Suggested colours:

- A - green
- B - red
- C - yellow

Join A, B, C (paper strips) by pasting. Pull/push the tip X, the bird will move up and down.

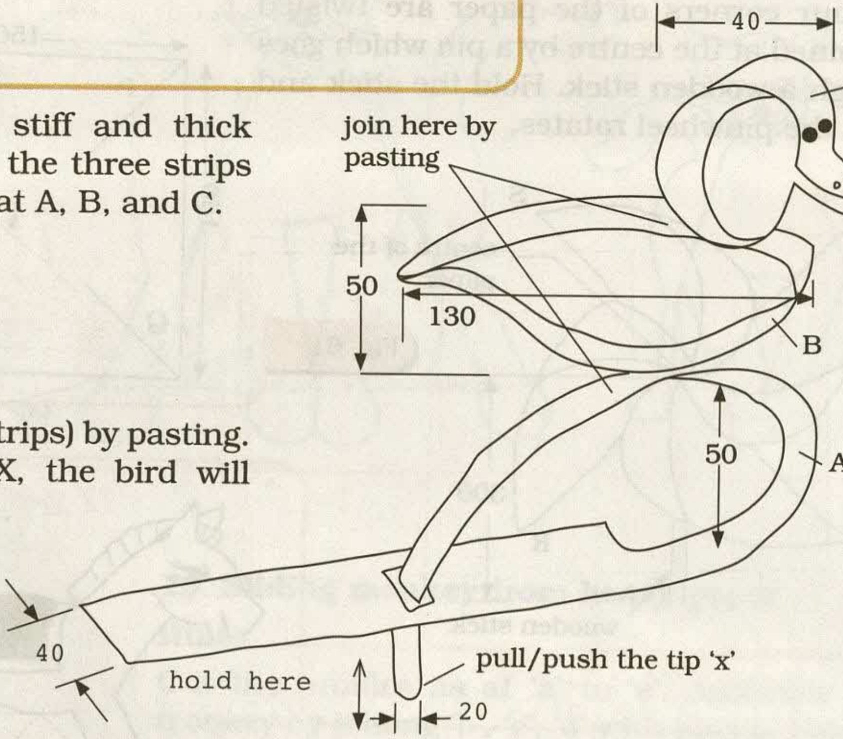


Fig. 63

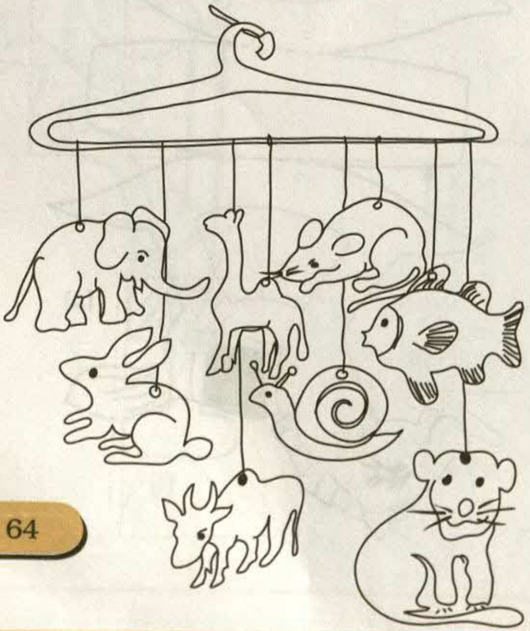


Fig. 64

17. Animal mobile from heavy paper

Hints

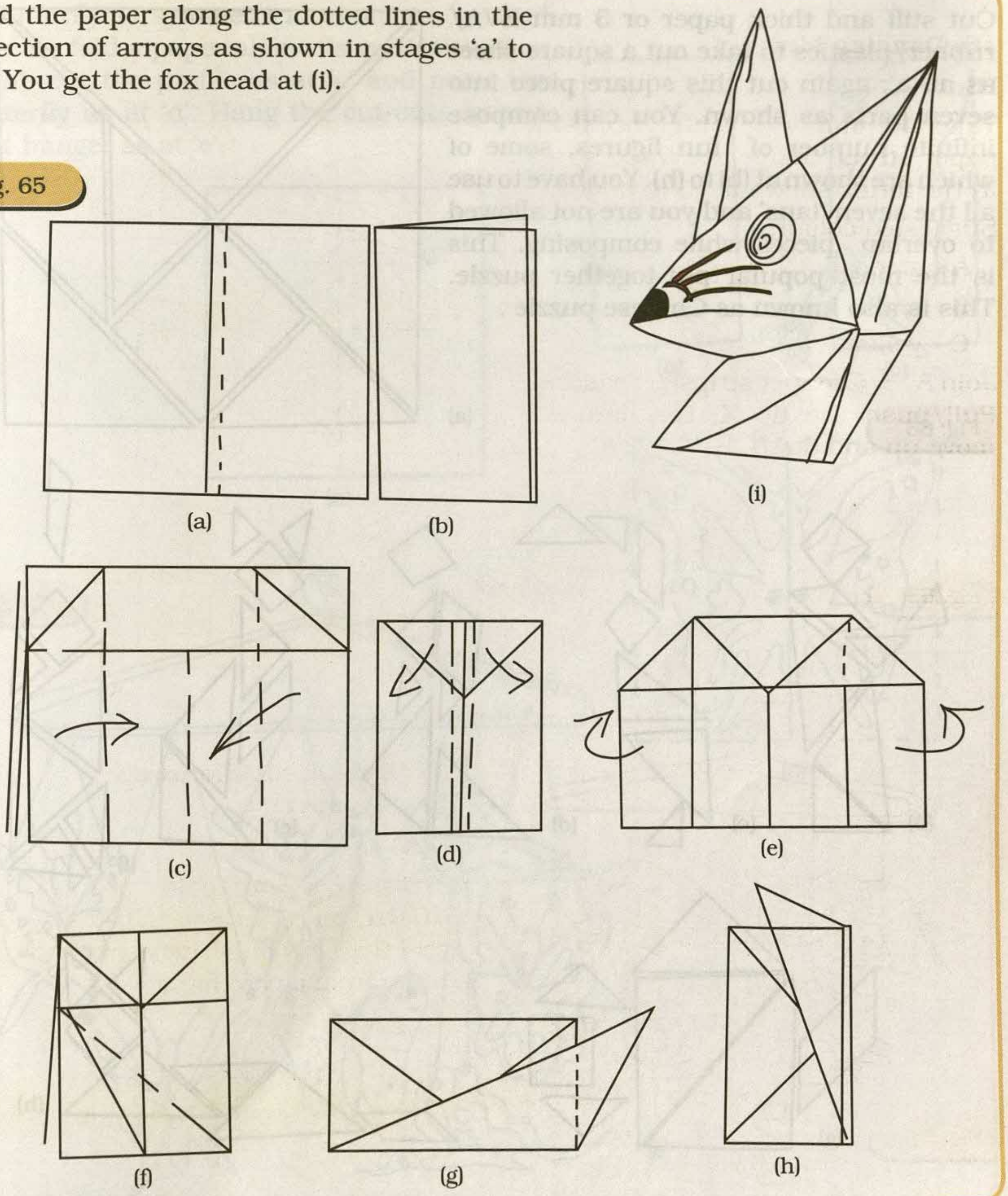
Figures of animals are drawn on a heavy paper and then cut out. These are hung from a coat hanger.

18. Fox head

Hints

Fold the paper along the dotted lines in the direction of arrows as shown in stages 'a' to 'h'. You get the fox head at (i).

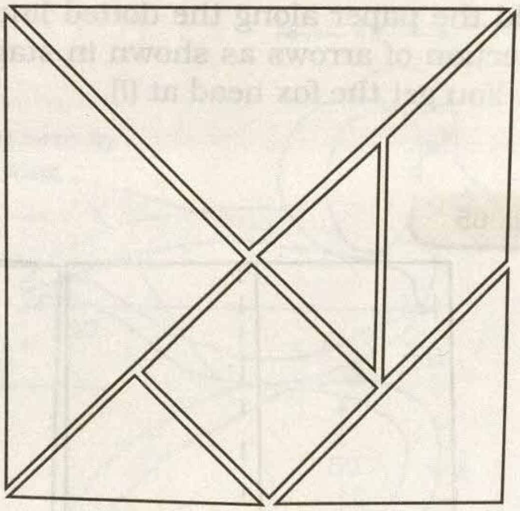
Fig. 65



19. Tangram

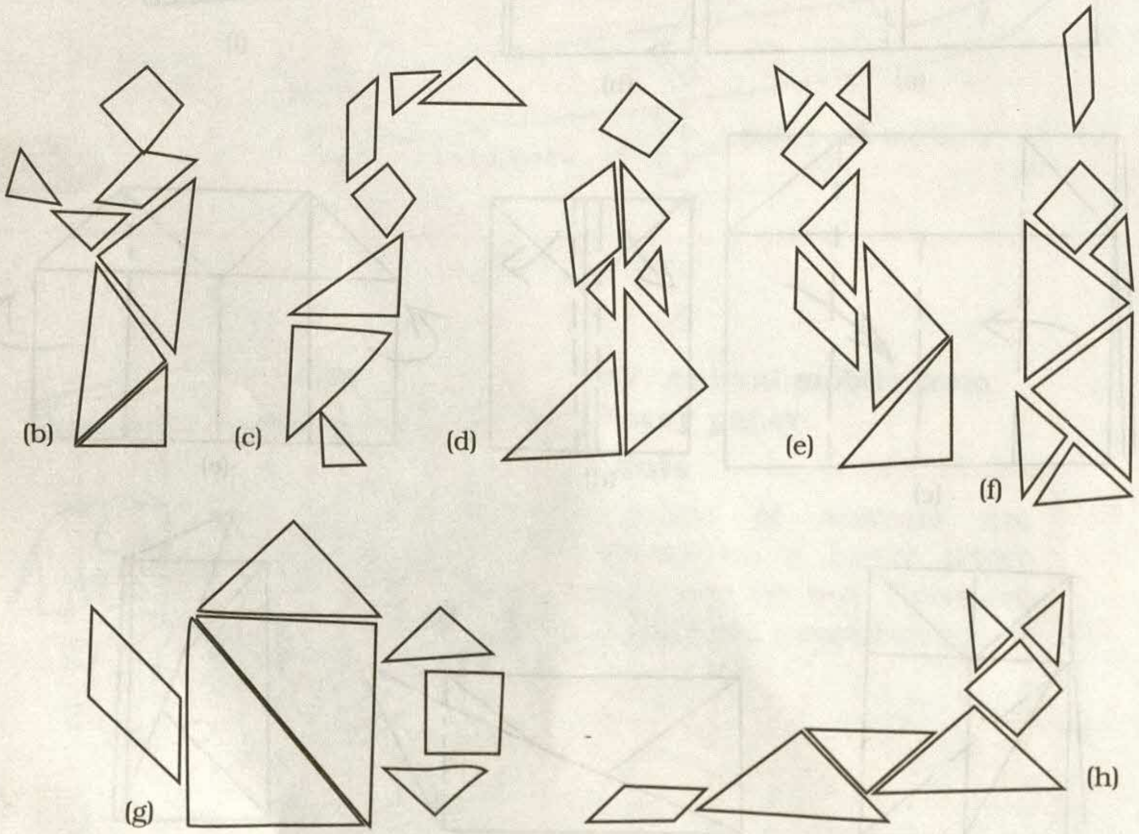
Hints

Cut stiff and thick paper or 3 mm EVA/ rubber/plastics to take out a square sheet as at 'a'; again cut this square piece into seven parts as shown. You can compose infinite number of fun figures, some of which are shown at (b) to (h). You have to use all the seven 'tans' and you are not allowed to overlap pieces while composing. This is the most popular put-together puzzle. This is also known as Chinese puzzle .



(a)

Fig. 66

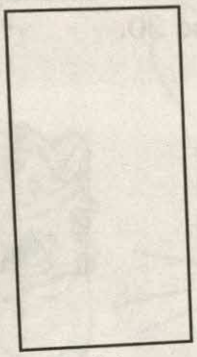


(b) (c) (d) (e) (f) (g) (h)

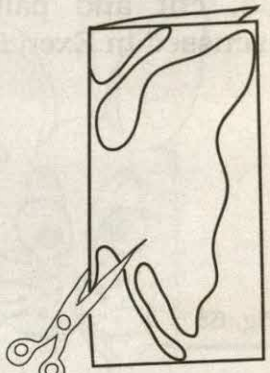
20. Mobile butterfly from heavy paper

Hints

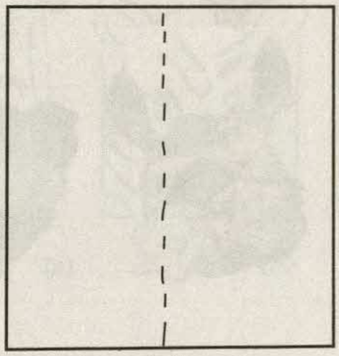
A butterfly is symmetrical about its vertical axis. So fold a paper about its vertical axis as at 'a', cut the profile as at 'c' and paint the butterfly as at 'd'. Hang the cut-outs from a coat hanger as at 'e'.



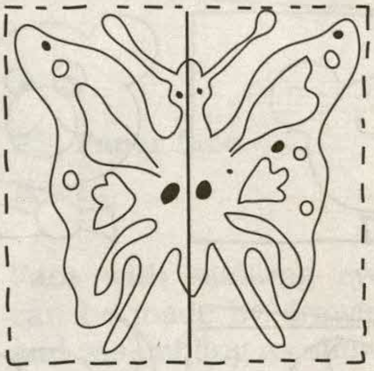
(b)



(c)

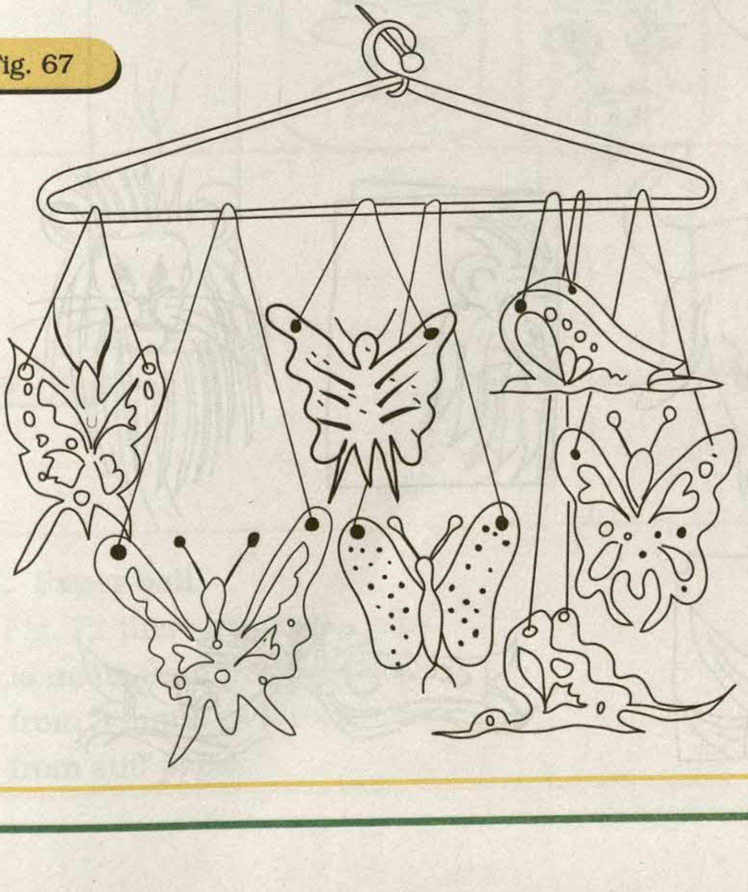


(a)



(d)

Fig. 67



(e)

21. Face masks from paper

Hints

Draw the profiles on a heavy paper, fold, cut and paint as already discussed in Exercise 20.

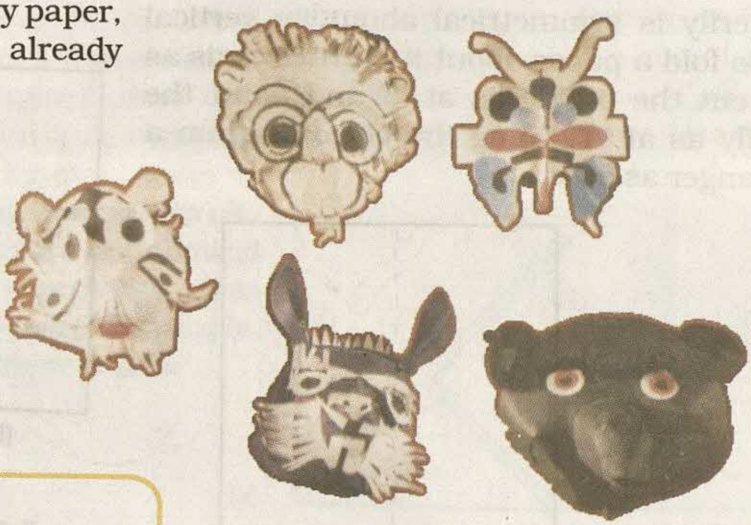
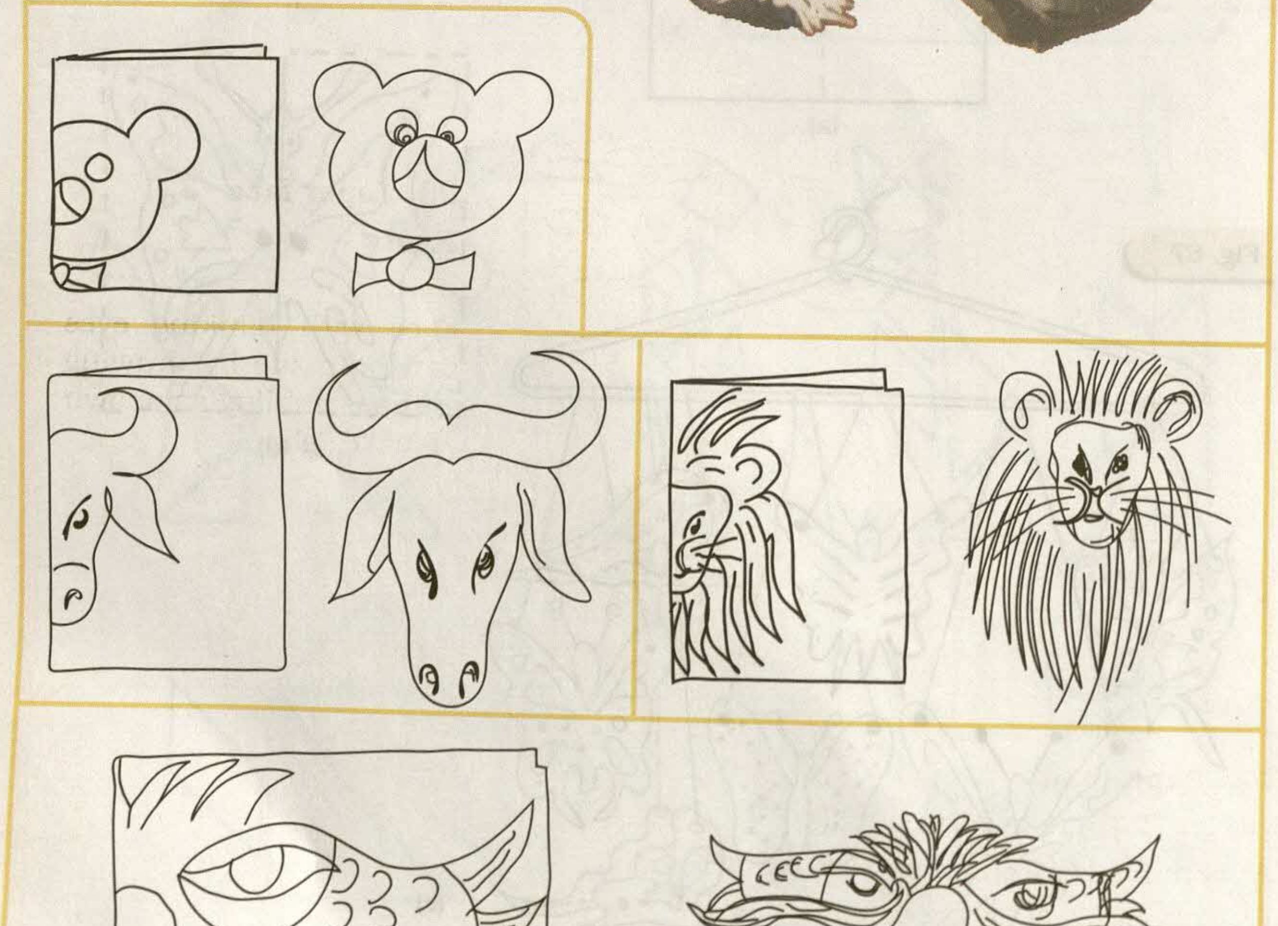


Fig. 68



22. Paper cylinder masks

Hints

As in Fig. 69 you may shape and roll papers to make cylinder masks of dog, tiger, owl, rabbit (as at a,b,c,d). Face with blinking eyes can be made by drawing and assembling as shown at 'e', 'f', 'g'.

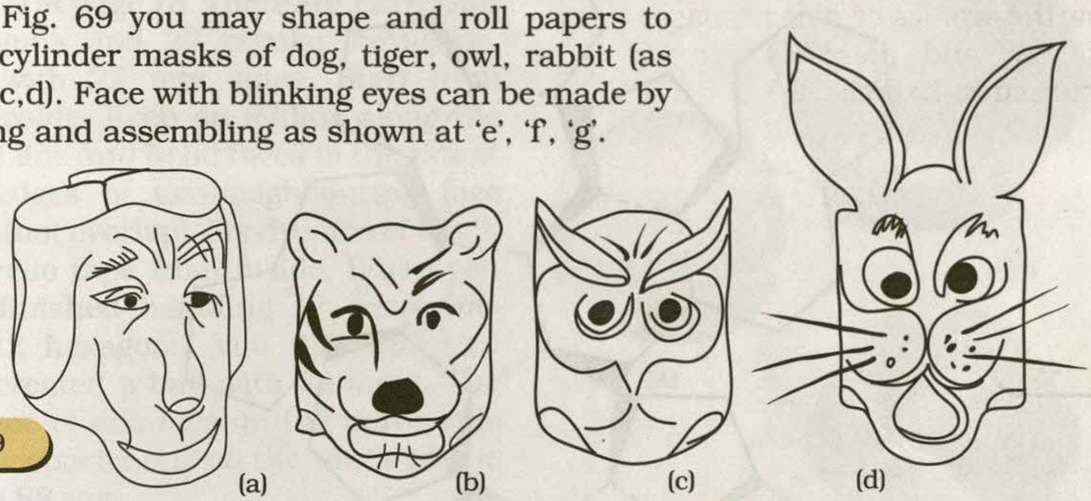
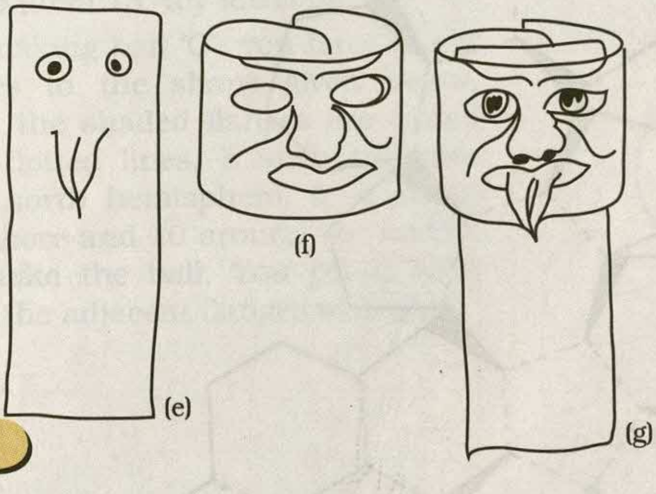


Fig. 69

(a) (b) (c) (d)



(e) (f) (g)

Fig. 70

23. Paper face

Hints

Face with blinking eyes can be made by drawing and assembling as shown at 'e', 'f', 'g'.

24. Paper ball

In Fig. 72 there are three balls:

'A' is made from thick paper.

'B' from 3 mm EVA sheet.

'C' from stiff paper.

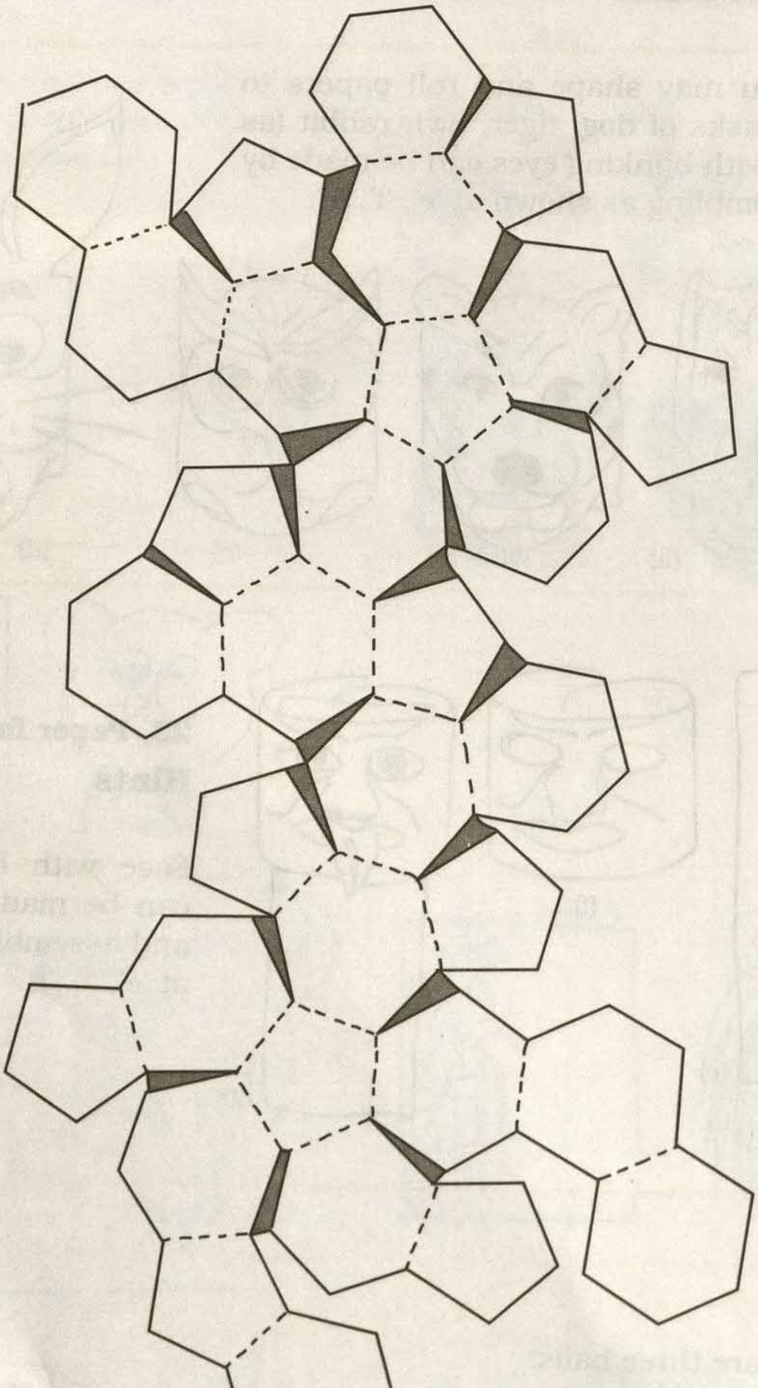


Fig. 71

If you want to make the ball 'A', you have to trace the geometrical figure (Fig. 71) at page 78. There are 12 regular pentagons and 22 regular hexagons, each with 22 mm sides. Start from the topside. Keep on folding along the dotted line and bend faces to the extent that edges of two-neighbouring face touch (not overlap). Fix this line of touch with cello tape from inside. When you have finished handling 12 pentagons and 22 hexagons, you find that you have created a ball with 34 faces. The distance of one face on the north pole to the opposite one on the south pole is nearly 88 mm.

Ball 'B' has already been described at page 65 (Item 13, toy ideas II).

For making ball 'C', you have to cut triangles in the shape given below, so that the shaded flanges are folded at the dotted lines. 5 such triangles at the north hemisphere, 5 at south hemisphere and 10 around the middle zone make the ball. You get it after joining the adjacent flanges with glue.

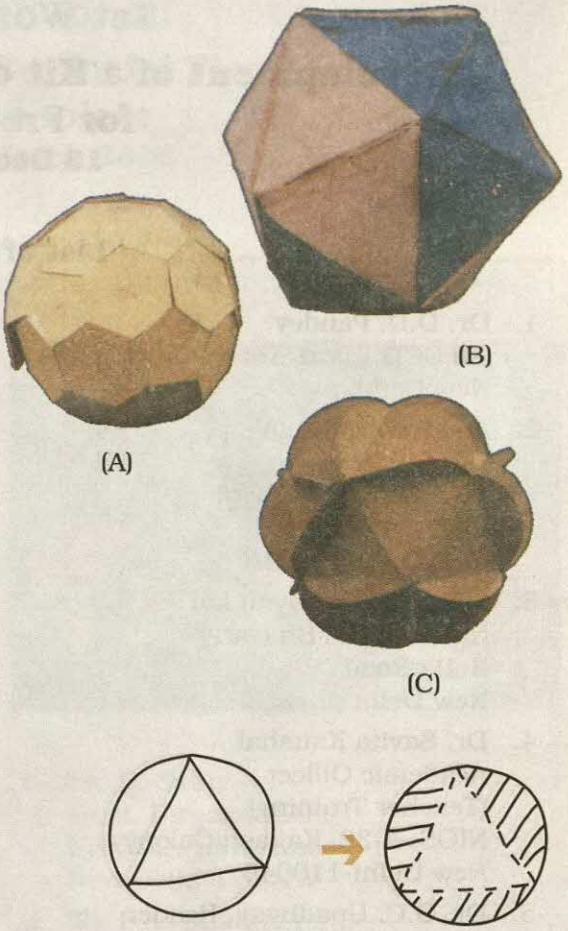


Fig. 72

1st Workshop on
Development of a Kit of Essential Play Materials for Pre-schoolers
13 December 2005

List of Participants

1. Dr. D.D. Pandey
NIPCCD, Hauz Khas
New Delhi
2. Ms. Savitri Singh
Headmistress
I.I.T. Nursery School
I.I.T. Campus
New Delhi-110016
3. Mr. Satya Narayan Lal
National Bal Bhavan
Kotla Road
New Delhi
4. Dr. Savita Kaushal
Academic Officer
(Teacher Training)
NIOS, A-38, Kailash Colony
New Delhi-110048
5. Dr. G.C. Upadhyay, Reader
D.E.E., NCERT
6. Dr. Romila Soni, Teacher
D.E.E., NCERT
7. Prof. H.O. Gupta
Workshop, NCERT

8. Sh. Parmod Sharma
Graphic Asstt. and Puppet Artist
CIET, NCERT
9. Sh. Vasudev
Artist
National Bal Bhavan
Kotla Road, New Delhi
10. Prof. P.K. Bhattacharyya
Coordinator
DESM, NCERT

2nd Workshop on

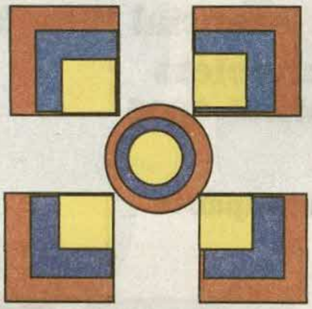
Development of a Kit of Essential Play Materials for Pre-schoolers

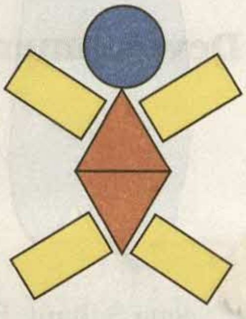
27 and 28 March 2006

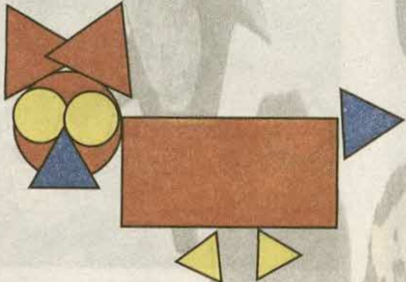
List of Participants

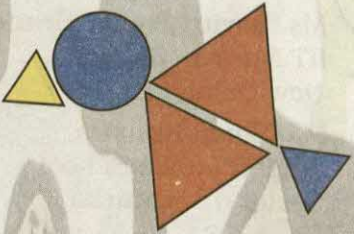
1. Ms. Neena Sahani, Principal
   NTTI (Bal Bharti), Pusa Road
   New Delhi-110005
2. Ms. Savitri Singh, Headmistress
   IIT Nursery School
   New Delhi-110016
3. Ms. Sonia Kumara
   Pragati Public School
   Sector-13, Dwarka
4. Ms. Geetanjali Chhabra
   Pragati Public School
   Sector-13, Dwarka
5. Ms. Arti Kapoor
   Pragati Public School
   Sector-13, Dwarka
6. Dr. Romila Soni
   DEE, NCERT
   New Delhi-10016
7. Sh. Parmod Sharma
   Graphic Assist. and Puppet Artist
   CIET (NCERT)

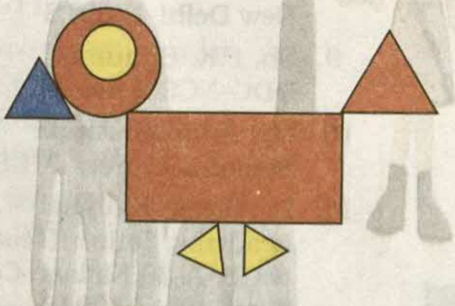
8. Sh. B. Sahu
   Asstt. Director (ECE)
   NIPCCD, Hauz Khas
   New Delhi-110016
9. Sh. P.K. Bhaumik
   DDG-NCSM (Retd.)
10. Ms. Anupam Ahuja
    Senior Lecturer, DTEE, NCERT
11. Dr. Savita Kaushal
    Academic Officer (Teacher Trg)
    NIOS, A-38 Kailash Colony
    New Delhi-110048
12. Ms. Padma Yadav
    DEE, NCERT
13. Dr. G.C. Upadhyay
    Reader, DEE, NCERT
14. Prof. P.K. Bhattacharyya
    Coordinator, DESM, NCERT

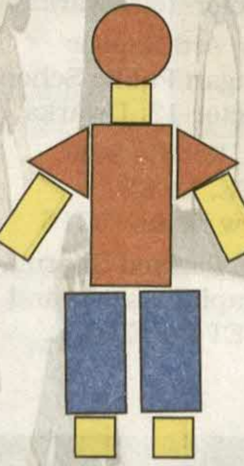


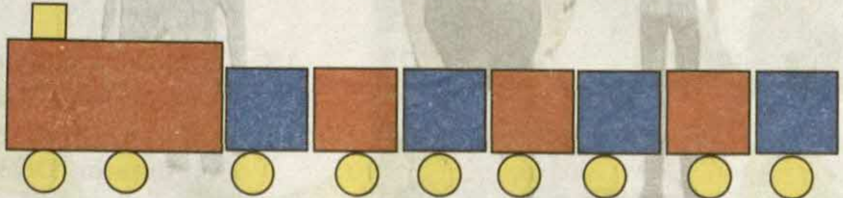




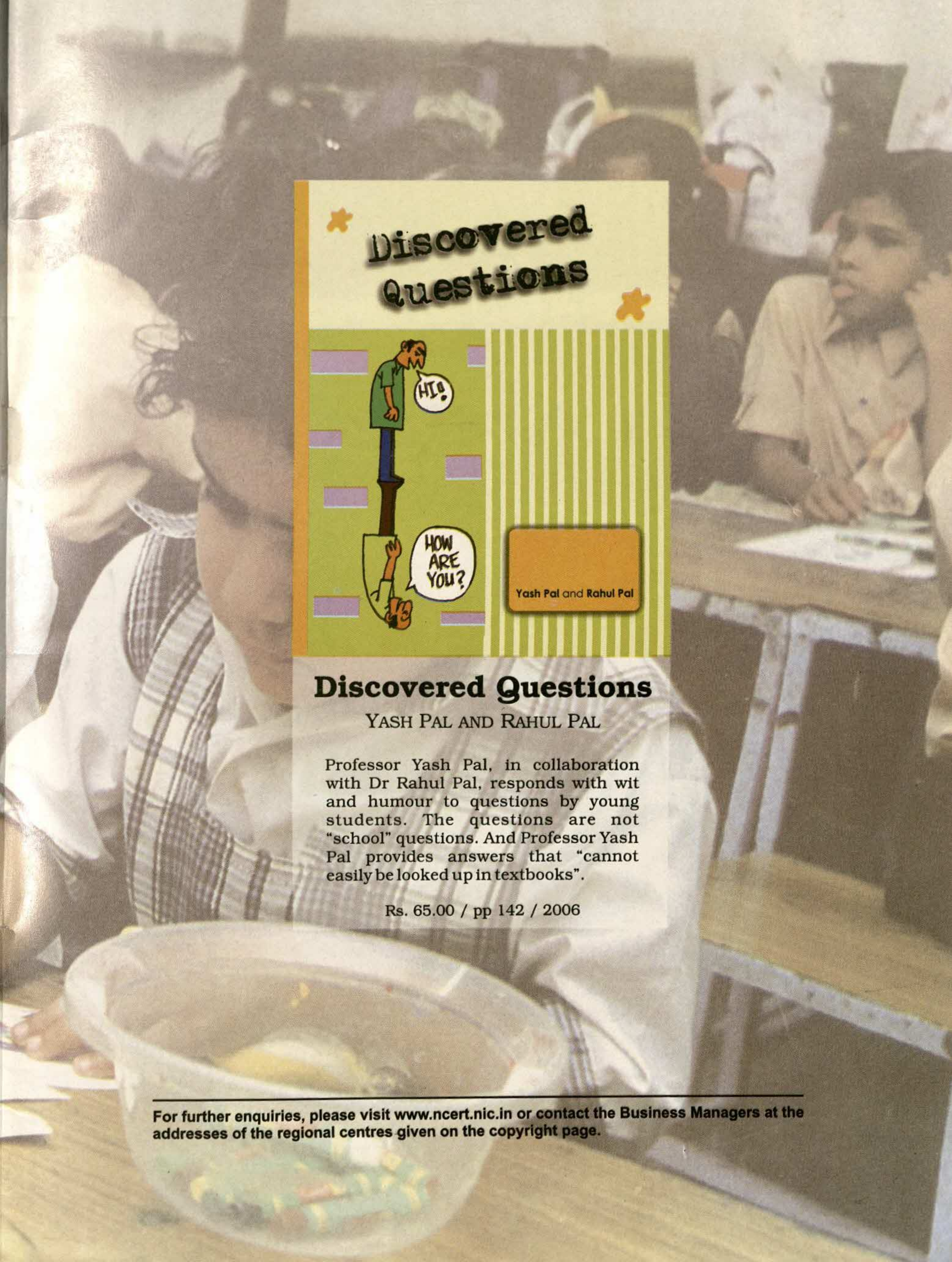








S. C. E. R. T.
Library
25/3, B. C. R



Discovered Questions

YASH PAL AND RAHUL PAL

Professor Yash Pal, in collaboration with Dr Rahul Pal, responds with wit and humour to questions by young students. The questions are not "school" questions. And Professor Yash Pal provides answers that "cannot easily be looked up in textbooks".

Rs. 65.00 / pp 142 / 2006

For further enquiries, please visit www.ncert.nic.in or contact the Business Managers at the addresses of the regional centres given on the copyright page.

Kit of
Essential Play Materials
for Pre-Schoolers
राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्
NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING
NCERT

1563

राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्
NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING

ISBN 81-7450-699-3